Agenda Item No.

City Council Meeting of:

FEB 28, 2011

CITY OF MIAMI SPRINGS, FLORIDA
MEMORANDUM

DATE: February 21, 2011

TO: The Honorable Mayor Bain and Members of the City Council

VIA: James R. Borgmann, City Manager

FROM: Richard E. Ventura, AICP, City Planner

RE: **Council Review and Adoption of the City of Miami Springs Consolidated Comprehensive Land Use Plan; Comprised of the Existing Comprehensive Plan Adopted by Ordinance No. 849-98 and Subsequent Amendments Mandated by the State of Florida.**

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This is the single, bound copy of the consolidated Comprehensive Plan, which is a combination of Miami Springs' existing Comprehensive Plan, adopted in 1998, and subsequent amendments mandated by the State and adopted by the City, such as the Public Schools Facilities Element and updated Capital Improvements and Intergovernmental Coordination elements.

Additionally, and perhaps most importantly, the Future Land Use Element has been revised to reflect the elimination of the Airport, Highway, Marine Business District; the present Airport Golf, 36th Street and Abraham Tract districts and the new floor area ratios across the three districts (Part II: Goals, Objectives and Policies; pp. 18 and 19). The Existing and Future Land Use maps in the existing plan have been replaced by a single, revised Future Land Use Map (Part II, p. 88).

There are aspects of the existing text of the 1998 plan and the Future Land Use Map that need updating and it is proposed that these will be addressed through the EAR-based amendment process, which could commence as early as the spring of 2012.

ATTACHED DOCUMENTS: City of Miami Springs Comprehensive Plan, adopted by Ordinance No. 849-98 (September 28,1998) and containing all subsequent amendments through Ordinance No. 988-2010 (January 25, 2010).

City of Miami Springs, Florida

Comprehensive Plan

Adopted by
Ordinance No. 849-98
September 28, 1998

Consolidated through
Ordinance No. 988-2010

Consolidated by:

LaRue Planning
& Management Services, Inc.
1375 Jackson Street, Suite 206
Fort Myers, Florida
239-334-3366
Serving Florida Local Governments Since 1988

City of Miami Springs
201 Westward Drive
Miami Springs, Florida 33166

Printed: January 2011

City of Miami Springs
Comprehensive Plan

Part I: Data and Analysis

and

Part II: Goals, Objectives and Policies

Part I: Data and Analysis

December 1998

Comprehensive Plan

CITY OF MIAMI SPRINGS
COMPREHENSIVE PLAN

PART I: Data and Analysis

December 1998

Part I is not an adopted part of the Miami Springs Comprehensive Plan.
It provides the data and analysis which supports part II.

Part II consists of goals, objectives and policies that were adopted on First Reading by the Miami Springs City Council on June 23, 1997 and adopted on Second Reading by the Miami Springs City Council on September 28, 1998. The Florida Department of Community Affairs Published a "Notice of Intent" to find this plan "in compliance" with Florida law on December 3, 1998 and the period during which objections to that finding could be made ended on December 24, 1998 without any objection being raised

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1. FUTURE LAND USE ELEMENT

POPULATION

General Characteristics: The number of people living in the City decreased from 13,279 in 1970 to 12,350 in 1980 and then increased to 13,268 in 1990. The median age increased by 4.2 years to 38.8 years between 1970 and 1980, but then dropped to 37.5 in 1990. The proportion of people 65 or older increased from 8.9 to 14.7 percent between 1970 and 1980 and again slightly to 16.1 percent in 1990. The proportion of non-whites and Hispanics increased from 0.3 to 0.5 percent and from 13.0 to 21.1 percent, respectively, between 1970 and 1980, according to the 1989 plan. By 1990 non-whites amounted to 7.4 percent of the population and Hispanics amounted to 41.8 percent.

Population Projection: Table 1.2 presents the population projection used in this plan. The population projection *per se* was supplied by the Metro-Dade Planning Department in a publication entitled "Population Projections by City" dated May 1995. Other related projections are shown in Table 1.2. The methodology by which they are derived is explained in a note at the bottom of the table. The projected decline in population is consistent with the limited amount of land available in the City for new residential development and the fact that no areas of the City are strong candidates for residential redevelopment at significantly higher densities.

Table 1.1
Population Projections

	1990	1994	2000	2005	2010	2015
Population	13,268 (1)	13,343 (6)	13,134 (7)	13,015 (7)	12,854 (7)	12,646 (7)
In Households	12,974 (1)	13,048	12,843	12,726	12,568	12,364
In Group Quarters	294 (2)	295	291	289	286	282
Households	5,094 (3)	5,123	5,043	4,997	4,935	4,855
Population/Household	2.55	2.56	2.52	2.50	2.47	2.43
Housing Units	5,342 (4)	5,342	5,342	5,342	5,342	5,342
Vacant	248 (1)	248	248	248	248	248
Homeowner Vacancy Rate	1.2 (5)	1.2	1.2	1.2	1.2	1.2
Rental Vacancy Rate	5.3 (5)	5.3	5.3	5.3	5.3	5.3

Sources: (1) U.S. Census Bureau, CH-1-11 General Housing Characteristics, Table 58, 1990. (2) U.S. Census Bureau, CPH-1-11 Summary of Population and Housing Characteristics, Table 5, 1990. (3) U.S. Census Bureau, CH-2-11 Detailed Housing Characteristics, Table 80, 1990. (4) U.S. Census Bureau, CH-2-11 Detailed Housing Characteristics, Table 79, 1990. (5) U.S. Census Bureau, CPH-1-11 Summary Population and Housing Characteristics, Table 7, 1990. (6) University of Florida, Bureau of Economic and Business Research, "Florida Estimates of Population 1994," April 1994. (7) Metro-Dade Planning Department, "Population Projections by City," May 1995.

Methodology: Projections for population in households; population in group quarters; households; and population / household were derived by reducing 1990 numbers by the same rate Dade County projected population to decline. Housing units are projected to hold constant because there is no additional land for development. Vacancies and vacancy rates are projected to hold constant. The "Vacant" category includes: vacant for sale; vacant for rent; vacant for seasonal, recreational or occasional use; and all other vacant from Table 79, CH-2-11. The table reflects an anticipated increase in the number of units held for seasonal and occasional use; thus households decline while housing units and vacancy rates remain constant.

Vacancy Rate: In 1980, Miami Springs had very low vacancy rates, 1 percent for all housing and 3 percent for rental housing. In 1990 the vacancy rate was 4.6 percent for all units, 1.6 percent for home-owner units and 5.3 percent for renter units.

Seasonal Population: The 1989 plan estimated that in 1988 the City contained over 1,800 seasonal residents on a peak day, about 15 percent of the permanent population. This EAR estimates 1990 seasonal population at 2,371, almost 18 percent of the 1990 enumerated population. The methodology for this estimate is explained in a note to a nearby table. The City is an attractive location for hotels because of its proximity to the Miami International Airport. Several hotels have been constructed in recent years. The most notable are in the area along Le Jeune Road south of 36th Street

Table 1.2
Seasonal Population Estimates and Projections

	1985	1990	1994	2000	2005	2010	2015
Seasonal Population	2,274(1)	2,371(1)	2,456	2,589	2,706	2,808	2,934

Source: (1) Metro-Dade Planning Department, "Seasonal Transient Population," December 1992.

Methodology: The seasonal population estimate for 1985 and 1990 was taken from sub-area 4.4 of Metro-Dade Planning Department's publication, "Seasonal-Transient Population." The rate of increase of 0.9 percent per year, between these two estimates was selected to project the seasonal population to the year 2015. This is substantially less than the Greater Miami Visitor and Convention Bureau's projection for the period 1987 to 1990 (6.5 million to 7.2 million).

EXISTING LAND USE

Existing Land Use Map [(9J-5.006 (1)]: Existing land uses are shown in Figure 1.1 and discussed in the following narrative. Existing land uses are tabulated in Table 1.3. Data related to land use is shown in Figures 1.2 through 1.6. These figures are entitled:

Figure 1.2: Existing Land Use Map, *Existing and Planned Public Potable Water Wells and Wellhead Protection Areas*

Figure 1.3: Existing Land Use Map, *Rivers, Bays, Lakes, Floodplains, Harbors and Wetlands*

Figure 1.4: Existing Land Use Map, *Minerals and Soils*

Figure 1.5: Existing Land Use Map, *Historic Resources*

Figure 1.6: Existing Land Use Map, *Areas Subject to a Redevelopment Finding of Necessity*

Overall Moderate Density Residential Character: Single family residential is the primary land use in the City. The 1989 Comprehensive Plan cited this as a the basis for the high quality of life in Miami Springs, which was perceived to be desirable. Overall, nearly half the land area is occupied by single family residential use (45 percent). Over one eighth is occupied by recreation and open space uses (13 percent), the largest of which is the City of Miami Municipal Golf

Course. Under one twentieth is occupied by commercial uses (3 percent). Over one fourth was occupied by streets and water (26 percent). The density of Miami Springs as measured by population per square mile is higher than some suburban locations of Dade County, but lower than the most urban areas. In 1990, Miami Springs had a density of 4,834 people per square mile. Lower density communities included Kendall and Miami Shores (3.577 and 4,033 people per square mile, respectively). Higher densities communities included Surfside and Miami Beach (8,216 and 13,234 people per square mile).

Structure of Street Pattern: The street pattern gives structure to the City. Three radial streets converge on a traffic circle. A rectangular street grid is superimposed on the radial structure. Commercial uses are concentrated at and near the Circle and along Westward Drive which extends west from the Circle. This is an old form of city design that was thought to be passé a few years ago. The 1989 Miami Springs Comprehensive Plan noted that vehicular circulation suffers because the convergence of the major roadways to a single point causes traffic to be concentrated in a confined area. Since 1989, the use of formal schemes of town design like that employed in Miami Springs has become more popular. However, it must be accompanied with adequate parking and opportunities to concentrate pedestrian traffic where walkers will be safe and comfortable. The City of Miami Country Club occupies a substantial portion of Miami Springs.

Edges: There is a major commercial strip along N.W. 36th Street. This forms the southern edge of the City, but it does not appear to be an integral part of Miami Springs. It has businesses sometimes characterized as "fringe" because they are typically found near the fringe of a prime business district rather than within it. They cannot afford the rents that are charged for the best business locations. N.W. 36th Street also has businesses which provide goods and services related to the Miami International Airport, which lies just across N.W. 36th Street. The Miami River Canal forms the northeast edge of the City; Okeechobee Road lies parallel to and just beyond the Miami River Canal. The Ludlam Canal forms the west edge of the City; the Florida East Coast Railroad Hialeah Yards lies to the west just beyond the canal.

Miami International Airport (MIA) Imapcts: The 1989 plan characterized the Miami International Airport as a negative influence outside the City. It was said to contribute to commercial sprawl, incompatibility of land uses, strained traffic conditions, noise pollution, and an overall unattractive appearance. These problems were most pronounced on 36th Street. It is clear from the perspective of 1996 that the airport: 1) generates traffic, 2) concentrates traffic (along the roads that lead around it); 3) generates noise and 4) is unattractive in places. However, some very desirable development has occurred south of the Miami International Airport. Furthermore, airports are known to have been successfully buffered from adjacent development. Thus, the Miami International Airport can and could be viewed as an opportunity.

Miami International Airport (MIA) Growth: It has been projected that Miami International Airport will double its actual 1993 Total Passenger and Total Freight volume as follows:

> ***Passenger Volume:*** 1993 passenger volume is projected to double by about. To accommodate passenger increases, 500,000 square feet of additional space will be needed for ticketing, baggage claim, rental car services, limousine services, hotel courtesy vehicles, and visitor and employee parking. This expansion could be accommodated at the existing airport terminal, but a portion of it can also be accommodated at the Miami Intermodal Center (MIC) to be situated east of Leuune Road.
>
> ***Freight Volume:*** 1993 freight volume is projected to double by 2005. To accommodate the projected growth in cargo volume, the Airport is building $500 million worth of new cargo facilities, largely on the west side of the Airport. Data collected since the freight projections were prepared suggest that growth could exceed the projections, with the result that MIA could surpass Tokyo Narita as the world's number one cargo airport by 2000.

Projected growth of passenger and freight traffic at Miami International Airport from 1993 through 2015 is shown in Table 1.4.

Historic and Architectural Sites: Table 1.5 lists 32 historic and architectural sites. The City adopted an historic preservation ordinance in 1982. The ordinance created the Historic Preservation Board made up of five members appointed by the City Council. The Board was given authority to designate historic sites. No designated building or site may be altered, restored, renovated, excavated, moved, or demolished without the permission of the Board. The Pueblo Hotel portion of the Fair Havens Nursing Home is a state-designated historic site. The historic status of the Glenn H. Curtiss mansion at the Villas has been by a resolution of the Historic Preservation Board, Resolution Number HP-87-1.

Transportation [9J-5.006 (2)(a)]: Most of the streets in the City carry local traffic. Congestion on non-local streets adjacent to the City is believed to cause cut-through traffic on City streets. There is no need to upgrade the capacity of local streets. There is no need to upgrade the capacity of county collectors in the City. There is a need to upgrade the capacity of Le Jeune Road, 36th Street and Okeechobee Road. Travel demand and vehicular volumes in the "Iron Triangle" are expected to continue to increase with regional growth, in general and with Miami International Airport (MIA) expansion, in particular. The Miami Intermodal Center (MIC) will be a second, remote terminal for the Miami International Airport, situated east of the airport and east of Le Jeune Road. It is intended, in part, to meed the identified space need described in the paragraph entitled "Miami International Airport Growth." The MIC would further incorporate extensions of existing and future rail transit (*e.g.,* Metrorail) and commuter rail (Tri-Rail), future inter-city High Speed Rail, Metrobus and a future rail transit line planned to run east from the vicinity of Florida International University Tamiami Campus to the MIC and then to the Port of Miami, South Beach and the Miami Beach Convention Center. Incorporated also are proposals for a supporting roadway network which would include an expressway connector between S.R. 112 Airport Expressway and S.R. 836 Dolphin Expressway, a fixed guideway transit from the MIC Terminal to the Main Terminal on the MIA site and raodway improvements at the "Iron Triangle".

Sanitary Sewer [9J-5.006 (2)(a)]: The entire City is served by sanitary sewers. There is adequate sewage treatment capacity for the current population and certainly for the projected future population, which is expected to be less than the current population. The City operates and maintains the collection system which is able to handle 3 million gallons per day, according to the 1989 Comprehensive Plan. Effluent is transported through Dade County interceptors to three Dade County treatment facilities: the North District Plant, the Central District (Virginia Key) Plant and the South District Plant. The 1994 capacity of the three Dade County treatment facilities was 298 to 318 million gallons per day (MGD) according to Table VII-9 of the 1995 Dade County Infrastructure Element EAR. The Dade County EAR projected the 1995 capacity to be 353 million gallons per day. Miami Springs customers generated 892,217,700 gallons of sewage in FY 1994. This amounted to 2.44 million gallons of sewage per day for all Miami Springs customers and 183 gallons per capita per day based on a 1994 population of 13,343. Miami Springs' 2.44 million gallons per day of sewage generation amounted to eight-tenths of one percent of the 318 million gallon Metropolitan Dade County plant capacity. Miami Springs' sewage generation for 2005 is projected to be about the same 2.44 MGD as in 1994, which will be six-tenths of one percent of the 380.5 MGD ***capacity projected*** for 2005 and seven-tenths of one percent of the 331.6 MGD minimum ***capacity called for*** in Table VII-12 of the 1995 Dade County Infrastructure EAR. The existing Miami Springs collection system is a repump system, *i.e.* one in which most of the pump stations "repump" wastes other gravity flow areas. Much of the equipment is obsolete. It could be replaced on an *ad hoc* basis as necessary. It could be replaced according to a comprehensive scheme to convert to a manifolding system, i.e. one in which each pump station pumps gravity collected flows to a force main rather than to another pump station. A 1995 engineering study evaluated eight options for conversion to a manifolding system. The recommended

option was originally projected to cost $1,553,300. Work done in 1998 has updated the cost estimate to $1,800,000. A 1998 study identified 1,750,000 worth of potential inflow/infiltration improvements. In 1998, the City sold a Utilities Systems Refunding and Improvements Revenue Bond, Series 1998. The total amount was for $11,000,000, $7.8 million for refunding, $1.8 million for manifold improvements and $1.4 million for inflow and infiltration improvements.

Solid Waste [9J-5.006 (2) (a)]: County wide, just under 9 pounds per person per day were generated in 1990 according to data in Tables VII-15 and VII-16 of Dade County's 1995 EAR. Generation comes from households, businesses, institutions and other uses. The 9 pounds per person per day rate averages all of these sources. Many communities which do not have major business, institutional and other non residential sources generate rates substantially below 9 pounds per person per day. According figures provided by the Miami Springs Public Works Department, Miami Springs generates less than 4.5 pounds per person per day. The level-of-service standard established in the 1988 Dade County Comprehensive Plan was a five year capacity based on a total waste generation of seven pounds per person per day. The Dade County 1995 EAR recognized that: 1) per person generation rates were changing based on new Florida statutory requirements, and 2) some communities previously served by Dade County would obtain solid waste disposal on the private market. Accordingly, the 1995 Dade County EAR observed that a new solid waste level of service standard should be set. It did not recommend what that standard should be. Planners at the Florida Department of Community Affairs have indicated to the author of this report that communities should assure adequate solid waste disposal capacity for the planning period. Assurance comes from having a contract with the county or a private concern. The minimum planning period for comprehensive plans is ten years under Florida law.

Drainage [9J-5.006 (2)(a)]: Areas adjacent to Westward Drive from Morningside to the Circle are on positive drainage systems. Other areas within the City are drained by French drains and injection wells which serve specific basins. Since of 1989, it has been City policy that new drainage facilities be of the infiltration type rather than the positive drain type. In addition, it has been City policy to replace positive drains into lakes with infiltration facilities. The 1989 Comprehensive Plan observed that "With the use of infiltration pits, pollutants are partially removed by natural soil filtration processes." In 1995, the City completed *a Stormwater Management Masterplan.* Thirty-eight drainage basins were identified. For each drainage basin, data was collected on total basin acreage, impervious area, pervious area, pond area and soil types. The study recommended construction of a positive outfall drainage system for five of the 38 basins (Basins 14, 19A, 19B, 32 and 38) and the construction of an underdrain system for two of the basins (Basins 15 and 17A). Total construction, contingency and engineering costs were estimated at $1,966,378. The study said the work could be done at one time or phased. If phased, the following phases were suggested: 1) Basin 17A ($21,200); 2) Basin 32 ($652,000): 3) Basins 19A & 19B ($210300): 4) Basin 14 ($525,900): 5) Basin 15 ($94,700); and 6) Basin 38 ($462,200). The subject basins are shown in Figure 4.1.

Potable Water [9J-5.006 (2)(a)]: There is adequate potable water capacity for current population and for the future population, although selective reinforcement may be necessary at some locations for fire protection. The Miami Dade Water and Sewer Authority (WASA) provides potable water for Miami Springs. The water is distributed to individual properties by a system owned and maintained by the City of Miami Springs. WASA's nearby Hialeah and John Preston Water Treatment Plants are the providers for Miami Springs. These plants had a 1994 capacity of 225 million gallons per day (MGD) according to Table VII-8 of Dade County's 1995 Infrastructure EAR. The Dade County 1995 EAR does not give a projected capacity for the Hialeah-Preston Plants, but it projects overall water system capacity to increase by about 25 percent between 1995 and 2005 from 421 MGD to 501 MGD. Miami Springs used 1,128,849,216 gallons of potable water in FY 1994. This amounts to 3.09 million gallons per day and 232 gallons per capita per day based on a 1994 population of 13,343. Miami Springs' 3.09 million gallons per day of water consumption amounted to 1.4 percent of the 225 million gallon plant capacity. Miami Springs' water consumption for 2005 is projected to be about the same 3.09 MGD as in 1994,

which will be six-tenths of one percent of the 501 MGD total system capacity projected for 2005 in Table VII-10 of the 1995 Dade County Infrastructure EAR. The City's 232 gallons per capita per day is high in comparison with surrounding communities according to the Florida Department of Community Affairs Objections, Recommendations and Comments Report on the June 23, 1997 first reading version of the City's de novo comprehensive plan. If this comment is correct, the reason may be due to the proportion of hotels and other non-residential land uses in the City which consume water, but do not add permanent population.

Natural Ground Water aquifer recharge [9J-5.006 (2)(a)]: The Biscayne Aquifer is a "sole source" water supply for south Florida. This shallow aquifer underlies all of Dade County, much of Broward County and a small portion of southeast Palm Beach County. The 1989 Miami Springs Comprehensive Plan noted that the Biscayne Aquifer "...is more than adequate for present needs...," but population growth and permeable area shrinkage were identified as possible future causes of demand exceeding supply [at current or otherwise desirable prices]. The 1995 Dade County Conservation Element EAR does not give a clear indication as to the accuracy of this judgment. It does indicate that the water supply afforded by the Biscayne Aquifer requires protection in order to ensure that it continues to function well into the future. Figure 16 of Dade County's 1988 Conservation, Aquifer Recharge and Drainage Element Support Components delineated prime aquifer recharge areas based on several USGS studies. These areas had not previously been delineated. The 1995 Dade County Conservation Element EAR notes that most undeveloped wetland areas in Dade County are designated for environmental protection or open land on the County's Land Use Map. The Bird Drive, North Trail and East Turnpike Basins are wetland areas that are within the urban Development Boundary, but other wetland protection areas are outside. The Dade County Department of Environmental Resource Management has developed regulations which require that wetland sites within the Urban Development Boundary be developed with a retention area amounting to 30 percent of the site. In 1994, the National Audubon Society proposed that a buffer be constructed along the eastern edge of the water conservation areas and the expanded boundary of the Everglade National Park. This concept, called the East Coast Buffer plan, was evaluated by the South Florida Water Management District as part of its ongoing Lower East Coast (LEC) Water Supply Planning Project. The Dade County Wellfield Protection Program is countywide in scope and jurisdiction and includes the City of Miami Springs in its regulatory coverage. Nearly all of Miami Springs was within the 210 day travel time impact contour surrounding the Hialeah-Miami Springs Wellfields. The balance of Miami Springs fell within the Maximum Day Protection Area. The dividing line was approximately along De Leon Drive, with the area to the west being in the 210 day travel time and the area to the east being in the Maximum Day Protection Area. The 210 day travel time contour represents the line from which it will take a molecule of water 210 days to migrate to the well during maximum draw down and no recharge. Salt water intrusion and pollutants threaten the Biscayne Aquifer. Salt water intrusion is a threat during drought when the fresh water table is low. Salt water intrusion is a threat when storms and tides drive salt water upstream, a problem that is curbed by salinity control structures. The 1989 Comprehensive Plan identifies the main sources of water pollution as industrial and domestic waste, surface water runoff from both agricultural and urban areas and older septic tanks. The 1989 Comprehensive Plan identifies two major tools for protecting water quality: 1) the Dade County 1982 Potable Water Supply Well Protection Ordinance which restrict the use of land in the well field cone of influence; and 2) the Dade County ordinance which requires retention of the first inch of runoff on site.

Land Available for Development [9J-5.006 (2) (b)]: There are three major vacant or nearly vacant parcels available for development in Mimai Springs. These parcels are shown on the Figure 1.1, Existing Land Use where they are labeled "a" through "f" These parcels are as follows:

Parcels a - d: These parcels are were formerly Eastern Airline Parking lots. They are now property of the Metropolitan Dade County Aviation Department (Miami International Airport), which received them pursuant to a legal settlement arising from ground contamination. They amount to approximately 15 acres. Parcel "b" fronts on South Royal Poinciana Boulevard. A high-rise office building lies to the east. Single family residential development

lies to the west. Parcel "b" could reasonably be developed with residential or non-residential uses. It would be desirable if it included some kind of transition and/or a buffer between the existing non-residential uses which are not very compatible with the adjacent single-family residential development. Parcels "c" through "e" lie adjacent to each other and/or to other non-residential development, making them suitable for non-residential development themselves. Parcels "c" through "e" lie in blocks which front on N.W. 36th Street, but only Parcel "d" actually fronts on N.W. 36th Street. Parcels "c" and "e" do not front on a major street; they are separated from N.W. 36th Street by commercial development.

Parcel e: This parcel is known as the Anthony Abraham Property. It contains approximately 8 acres. This parcel and its neighbors are surrounded by a railroad and by major thoroughfares, including an elevated limited access facility. It is not suitable for residential purposes. It may be very suitable for commercial uses related to the Miami International Airport. It is part of 43 acres that were annexed to Miami Springs in 1984.

Parcel f: This parcel is known as the "Villas Property." It amounts to approximately 12 acres. It contains the historic Curtiss Mansion. Until recently, it also contained various non-residential structures that have recently been razed to accommodate new development and because they were in such bad repair that they were unsafe. The site could be developed at a relatively high while preserving the historic Curtiss Mansion and various historic site features associated therewith.

There are no known development limitations on any of the seven vacant parcels identified above with respect to soils, topography or natural resources. The Curtiss Mansion and associated site structures is a development constraint on parcel a, but not a constraint that prohibits development altogether since a substantial portion of that site is vacant. There are no known historic constraints on the other parcels identified above. There were no known archeological sites of significance in the City. In addition to the above parcels, there are a few vacant lots throughout the City. There are no known development limitations on any of these vacant lots with respect to soils, topography, natural resources, historic resources or archeological resources.

Land Needed to Accommodate Future Population [9J-5.006 (2) (c)]: Rule 9J-5 of the Florida Administrative Code requires "An analysis of the amount of land needed to accommodate the population." The Rule appears to assume that population growth is an independent variable and that land and density are dependent variables. Reality in the United States is usually the opposite. This is particularly so in Miami Springs. Because Miami Springs is a built-up community and because there are other communities with significant vacant land, there will be no significant growth in population. Indeed, the population projections of the Metropolitan Dade County Planning Department show permanent population in Miami Springs declining. They also show seasonal population inclining, but this will not happen unless there are suitable locations to accommodate such population.

Redevelopment of Blighted Areas [9J-5.006 (2) (d) 1]: Miami Springs completed a *Finding of Necessity for Redevelopment* study in February 1995. The study supported a necessity for redevelopment in two areas, the "historic downtown" and "along the 36th Street corridor." A total of 42 blocks were studied with respect to the redevelopment criteria set forth in 163.355, *F.S.* The study supported a necessity for redevelopment in 22 blocks along 36th Street and 15 blocks around Curtiss Circle. The redevelopment criteria are as follows: 1) building deterioration, 2) site deterioration, 3) unsanitary conditions, 4) noise exposure, 5) traffic accidents, 6) inadequate transportation facilities, 7) inadequate street layout, 8) inadequate parking, 9) inadequate lot layout, 10) vacancies and obsolescence, and 11) crime. The City Council of Miami Springs adopted the *Finding of Necessity* report by Resolution Number 95-3013, dated October 1995. By Resolution 95-3014, the Council requested that Dade County to delegate its Charter granted redevelopment authority to the City of Miami Springs for the purpose of preparing and implementing a redevelopment plan for the two redevelopment areas. In July, 1995, the Miami Springs Planning Department published *Changes in Valuation of Developed Business and Sin-*

gle-Family Properties, 1989 to 1994. This report documented a significant increase in residential property values (positive 33.1 percent) and a significant decrease in business property values (negative 8.0 percent). The residential increase was attributed in part to the negative impact on housing supply of Hurricane Andrew (1992) The business decrease was attributed in part to the negative impact on business property demand occasioned by the demise of Pan American Airlines and Eastern Airlines, which together had accounted for about 50 percent of the passenger volume at Miami International Airport. The unattractive character of the business properties along 36th Street was believed to make them particularly vulnerable to the withdrawal of long-standing demand.

Development and Redevelopment of Flood Plain Areas [9J-5.006 (2) (e)]: Miami Springs falls within flood hazard zone AE as identified in the January 1984 Federal Emergency Management Agency Flood Insurance Rate Maps. In the AE zone, the 100 year flood elevation is seven feet. One hundred year flooding would occur along the Miami River canal and the Ludlam canal. Damage would likely be greatest to yards and to infrastructure. Some damage of first floors would occur. The Zone AE flood plain is along the Miami River Canal and east of the Ludlam Canal. The 1989 analysis concludes that, "Damage expected from flooding ... would not warrant redevelopment of existing structures." There is no known information which necessitates a change to this assessment. Police power regulations can feasibly hold redevelopment to current densities, which will not increase flood damage potentials. Redevelopment would have to be restricted to densities which are substantially below current densities in order to increase the cubic area available within the flood plain to accommodate floods and in order to reduce the amount of damage that could occur to property should a flood occur. Such a reduction in permitted development intensities in a fully built out community would not be feasible.

School Facility Plans [163.3177(6)(a), F.S.]: Section 163 3177(6)(a), F.S. requires that,

> The future land use element must clearly identify the land use categories in which public schools are an allowable use. When delineating the land use categories in which public schools are an allowable use, a local government shall include in the categories sufficient land proximate to residential development to meet the projected needs for schools in coordination with public school boards and may establish differing criteria for schools of different type or size. Each local government shall include lands contiguous to existing school sites, to the maximum extent possible, within the land use categories in which public schools are an allowable use. All comprehensive plans must comply with this paragraph no later than October 1, 1996.

In its Objections, Recommendations and Comments Report, the Florida Department of Community Affairs objected to the June 23, 1996 first reading version of the Miami Spring de novo Comprehensive Plan on the grounds that it lacks a public school siting analysis which the Department believes is required by the above language. The Objections, Recommendations and Comments Report calls upon the City to,

> Complete the [required?] public school siting analysis. Provide an analysis which demonstrates that sufficient land proximate to residential development will meet the projected needs for schools in coordination with the Dade County Public School Board. The analysis must include lands contiguous to existing school sites within the land use categories in which public schools are an allowable use.

In the June 23, 1996 first reading version of the de novo Comprehensive Plan, Schools are an allowable use only in the "Public and Private Education" Future Land Use Map category. The parcels designated in this category should be adequate to future needs, given the following facts: 1) Miami Springs is as nearly built out as any place in Dade County; 2) surrounding communities are nearly built out; 3) existing school sites have proved adequate for a number of years, 3) permanent occupied dwelling units are declining; 4) permanent population is declining. Of course the provisions of 163.3177(6) (a), F.S. as interpreted by the Department's Objections, Rec-

ommendations and Comments Report do not allow the City to come on its own to the conclusion that local conditions indicate a sufficiency of school sites. The City can only come to this conclusion in "coordination" with the Dade County School Board. However, as of January 8, 1998, meaningful coordination with the Dade County School Board on the need for school sites in the Miami Springs area is not possible, at least according to telephone comments provided on that date by Mr. George James of the Dade County School Board. Mr. James indicated that the School Board is required by state law to prepare periodically a "facilities survey" setting forth facility needs. According to Mr. James, there was on January 8, 1998 no effective survey of needs in place, the old survey having passed into oblivion due to the expiration of its statutory period of effectiveness and the new survey having not yet been commenced as of January 8. According to Mr. James, the School Board staff would begin writing the new survey recommendations on January 9 and was scheduled to put a draft before the School Board on March 18, 1998. Accordingly, it may be that the only practical way to accommodate the unknown need for schools in Miami Springs may be to permit schools in all residential districts.

Table 1.3
Existing Land Uses

Land Use	*Acres*	*Percent*
Single Family	815.00	45%
Duplex	8.00	0%
Multi-Family	49.00	3%
Commercial	66.00	4%
Public Facilities	98.00	5%
Recreation & Open Space	231.00	13%
Parking	13.00	1%
Vacant	63.00	3%
Streets & Water	483.00	26%
Totals	1,826.00	100%

Source: It is assumed that the Existing Land Use Map and the Existing Land Use Table in the 1989 Comprehensive Plan are consistent. The 1995 Existing Land Use Map was compared with the 1989 Existing Land Use Map. The acreage's in the Existing Land Use Table were adjusted based on the differences between the 1989 and 1995 Existing Land Use Maps. The tabulation reported above is being recalculated based on a computerized version of the Existing Land Use Map now being prepared.

Table 1.4
Growth of Passenger and Freight Traffic at Miami International Airport 1993-2015

	Actual 1993	Forecast 1995	Forecast 2000	Forecast 2005	Forecast 2010	Forecast 2015
Domestic Passengers	16,287,173	17,840,000	20,850,000	23,790,000	26,590,000	29,440,000
International Passengers	12,373,223	14,950,000	19,400,000	24,080,000	28,650,000	33,200,000
Total Passengers	28,660,396	32,790,000	40,250,000	47,870,000	55,240,000	62,640,000
Air Carrier Operations	275,276	296,030	332,176	365,242	399,984	430,965
Cargo Operations	39,740	40,500	49,200	57,200	65,000	73,471
Total Operations	533,554	582,303	634,376	685,442	734,684	780,940
Domestic Freight (Tons)	281,092	352,860	303,839	360,840	403,499	448,561
International Freight (Tons)	1,018,457	1,200,140	1,626,130	2,078,953	2,407,718	2,764,211
Total Freight (Tons)	1,299,549	1,553,000	1,929,969	2,439,793	2,811,217	3,212,772
Total On-Airport Employees	19,070	27,000	30,000	33,000	36,000	39,000

Sources: Landrum & Brown, MIA Master Plan Update, 1994; Dames & Moore, Dade County Aviation System Plan, 1994; Revised Freight Data by Metro-Dade Aviation Department, 1996; Miami Springs Planning Department.

Table 1.5
Historic Resources

Address	*Comment*	*Date*
200 Azure Drive	Osceola Apartments / Hotel	1925
309 Azure Way		1920-29
325 Azure Way		1920-29
333 Azure Way		1920-29
Canal Street	Miami Springs Bridge	1930
30 Canal Street		1920-29
24 Carlisle Drive		1920-29
125 Carlisle Drive		1920-29
45 Curtiss Parkway	Clune/Stadnik Building	1925
201 Curtiss Parkway	Fair Haven Center Drive	1920-29
4020 Curtiss Parkway	Blessed Trinity Catholic Church	1930-39
85 Deer Run	Lua Curtiss House I/The Alamo	1926
500 Deer Run	Glenn H. Curtiss Estate	1925
465 DeLeon Drive		1920-29
111 Fairway Drive	Hermance Residence Drive	1920-29
Flamingo Circle	Cinema Park	
281 Glendale Drive	Hunting Lodge & Skeet Club	1924
240 Hibiscus Drive		1920-29
31 Hunting Lodge Court	G. Carl Adams House	1926
Hunting Lodge Drive	Miami Golf Coruse	
27 Hunting Lodge Drive		1920-29
150 Hunting Lodge Drive	Lua Curtiss House II Drive	1920-29
424 Hunting Lodge Drive	Millard-McCarty House	1926
851 Hunting Lodge Drive	Hequembourg Home	1930-39
960 Hunting Lodge Drive		1920-29
Lafayette Drive		1920-29
633 La Villa Drive		
526 Navarre Drive		1920-29
241 Palmetto Drive		
265 Palmetto Drive		1920-29
51 Park Street	Miami Springs Elementary	1937
22 Pinecrest Drive	Kendall Residence	1925
299 Pinecrest Drive	Leaycraft Residence	1925
Poinciana Boulevard	Circular Park	

2. TRANSPORTATION ELEMENT

PURPOSE and FORMAT

Section 9J-5.019 of the Florida Administrative Code requires that,

> A local government which has all or part of its jurisdiction included within the urbanized area of a Metropolitan Planning Organization (MPO) ...shall prepare and adopt a ***transportation element*** [emphasis added] consistent with the provisions of this Rule and Chapter 163, Part II, Florida Statutes. For the affected jurisdictions, the transportation element shall replace the required plan elements of: ***traffic circulation; mass transit; and ports, aviation, and related facilities*** [emphasis added]... Within a designated MPO area, the transportation elements of the local plans shall be coordinated with the long range transportation plan of the MPO. The purpose of the transportation element shall be to plan for a multimodal transportation system that places emphasis on public transportation systems.

This provision of the Rule 9J-5 was added to the Florida Administrative Code on 3-23-94. Prior to that date, Miami Springs was required to include a traffic circulation element in its comprehensive plan; but it was not required to include mass transit or ports and aviation elements; Miami Springs fell below the population threshold which triggered mass transit and ports and aviation element requirements.

It is the purpose of this element to fulfill the new requirements of 9J-5.019. The format for fulfilling the new 9J-5.019 will be to include some of the required data and analysis directly herein and to include some of the required data and analysis by adopting the Dade County Transportation Element Data and Analysis by reference. Data and analysis included directly herein and included by reference to the Dade County Transportation Element Data and Analysis shall be as follows:

Data and analysis included herein	*Administrative Code Reference*
road system data as required by	9J-5.019 (2) (a) 1, a-c
significant parking facilities as required by	9J-5.019 (2) (a) 1, d
public transit system data as required by	9J-5.019 (2) (a) 2
bicycle and pedestrian way data as required by	9J-5.019 (2) (a) 3
airport facility clear zone data as required by	9J-5.019 (2) (a) 5
road classification/maintenance responsibility data as required by	9J-5.019 (2) (a) 8
road through lane data as required by	9J-5.019 (2) (a) 9
existing peak hour, peak direction los for roads as required by	9J-5.019 (2) (b) 1
capacity/duration of significant parking facilities as required by	9J-5.019 (2) (b) 2
analysis of the existing roads los and system needs based on existing design and operating capacities and most recently available adt and pht as required by	9J-5.019 (3) (a)
analysis of availability of roads to serve existing land uses as required by	9J-5.019 (3) (b)
analysis of availability of public transit to serve existing land uses as required by	9J-5.019 (3) (b)
analysis of growth trends and road travel patterns and interactions between land uses and roads as required by	9J-5.019 (3) (d)

analysis of compatibility between future land uses and transportation elements, including land use compatibility around airports as required by	9J-5.019 (3) (d)
analysis of projected road system levels of service and system needs based on future land use categories including the densities and intensities of uses as required by	9J-5.019 (3) (f)
consider projects planned for the FDOT Adopted Work Program, long range transportation plan and transportation improvement program of the MPO and the compatibility with the policies of such plans as required by	9J-5.019 (3) (g)
demonstrate how Miami Springs will maintain its adopted los standards for roads and transit facilities within its jurisdiction as required by	9J-5.019 (3) (h)
demonstrate how Miami Springs los standards advance the purpose of 9J-5.019 and the goals, objectives and policies of the future land use element and other elements of the comprehensive plan as required by	9J-5.019 (3) (h)
explicitly address and document the internal consistency of the plan, especially its provisions addressing transportation, land use and availability of facilities and services as required by	9J-5.019 (3) (i)

Data and analysis to be included in Dade County Comprehensive Plan and Adopter Herein by Reference	***Administrative Code Reference***
port facility data as required by	9J-5.019 (2) (a) 4
airport facility data (other than clear zone data) as required by	9J-5.019 (2) (a) 5
freight and passenger rail line and terminal data as required by	9J-5.019 (2) (a) 6
intermodal terminals data and access to intermodal facilities data as required by	9J-5.019 (2) (a) 7
major public transit trip generators and attractors based on the existing land use map as required by	9J-5.019 (2) (a) 10
designated local and regional transportation facilities critical to the evacuation of the coastal population prior to an impending natural disaster as required by	9J-5.019 (2) (a) 11
existing peak hour, peak direction los for mass transit facilities and corridors and routes as required by	9J-5.019 (2) (b) 1
analysis of the existing public transit system los and system needs based on existing design and operating capacities existing modal splits and vehicular occupancy rates as required by	9J-5.019 (3) (a)
analysis of the adequacy of existing and projected transportation systems to evacuate the coastal population prior to an impending natural disaster as required by	9J-5.019 (3) (c)
analysis of growth trends and public transit travel patterns and interactions between land uses and public transit as required by	9J-5.019 (3) (d)
analysis of existing and projected intermodal deficiencies and needs such as terminals, connections, high occupancy vehicle lanes, park and ride lots and other facilities	9J-5.019 (3) (e)
analysis of projected public transit system levels of service and system needs based on future land use categories including the densities and intensities of uses as required by	9J-5.019 (3) (f)

an analysis which identifies land uses and transportation management programs necessary to promote and support public transportation systems in designated public transportation corridors — 9J-5.019 (3) (j)

EXISTING TRANSPORTATION DATA [9J-5.019 (2) (a) & (b)]

Current Road System: The road system in and near Miami Springs is shown on Figure 2.1. Local, collector, arterial and limited and controlled access facilities are specified [9J-5.019 (2) (a) 1, a - c]. Functional classifications and maintenance responsibilities are specified [9J-5.019 (2) (a) 8]. The number of through lanes is shown [9J-5.019 (2) (a) 9]. Traffic count stations are shown on Figure 2.1 and the existing peak hour, peak direction levels of service for the roads on which these count stations are located are reported in Table 2.1. A major alteration to the current road system will occur in connection with development of the Miami Intermodal Center (MIC). MIC options under study are shown on Figures 2.7 and 2.8. [5.019 (2) (b) 2].

Significant Bicycle and Pedestrian Ways: Significant bicycle and pedestrian ways are shown on Figure 2.1 [9J-5.019 (2) (a) 3].

Significant Parking Facilities: Significant parking facilities are shown on Figure 2.2 [9J-5.019 (2) (a) 1, d]. The figure shows the capacity of significant parking facilities and duration limitations 5.019 (2) (b) 2].

Public Transit System: The current public transit network is shown on Figures 2.3 and 2.4. These figures depict Metrobus, Metrorail and Metromover lines, and major traffic generators and attractors that are served or should be served by the public transit system. [9J-5.019 (2) (a) 2]. A major alteration to the current public transit system will be located near Miami Springs and will result in new road construction in the part of Miami Springs south of N.W. 36th Street. This is the Miami Intermodal Center (MIC). MIC options under study are shown on Figures 2.7 and 2.8.

Airport Facilities: Airport facilities and clear zones are shown are shown in Figures 2.5 and 2.6, respectively. [9J-5.019 (2) (a) 5].

EXISTING TRANSPORTATION ANALYSIS [9J-5.019 (3)]

Roadway Levels of Service Standards: The basis for determining the adequacy of a roadway to handle traffic is the level of service (LOS) measurement. This measure is the basis for setting the level of service standard which is used in the concurrency management system, the State-mandated system for assuring that the infrastructure network is adequate to serve additional development. Levels of service are expressed as letters "A" through "F." The standardized descriptions of service levels used in transportation planning are as follows:

LOS A: Highest LOS which describes primarily free-flow traffic operations at average travel speeds. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at intersections is minimal.

LOS B: Represents reasonably unimpeded traffic flow operations at average travel speeds. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome. Drivers are not generally subjected to appreciable tensions.

LOS C: Represents stable traffic flow operations. However, ability to maneuver and change lanes may be more restricted than in LOS B, and longer queues and/or adverse signal coordination may contribute to lower average travel speeds. Motorists will experience an appreciable tension while driving.

LOS D: Borders on a range in which small increases in traffic flow may cause substantial increases in approach delay and, hence, decreases in speed. This may be due to adverse signal progression, inappropriate signal timing, high volumes or some combinations of these.

LOS E: This represents traffic flow characterized by significant delays and lower operating speeds. Such operations are caused by some combination of adverse progression, high signal density, extensive queuing at critical intersections and inappropriate signal timing.

LOS F: This represents traffic flow characterized at extremely low speeds. Intersection congestion is likely at critical signalized locations, with high approach delays resulting. Adverse signal progression is frequently a contributor to this condition.

The level of service of a roadway can be measured over any given period of time. Two common periods of time for which such measurements are taken are: 1) 24 hours and 2) the peak hour. The peak hour is the hour of the day when traffic is heaviest. On most roadways the peak hour occurs between 4:00 PM and 6:00 PM on a weekday. Rule 9J-5 of the Florida Administrative Code requires that local comprehensive plans analyze traffic based on both 24 hour and peak hour periods [9J-5.019 (3) (a)]and set level of service standards based on the peak hour [9J-5.019 (4) (1) 1]. Rule 9J-5 indicates that when reviewing local comprehensive plans for compliance with Rule 9J-5, the Florida Department of Community Affairs will consider "...whether the data were collected and applied in a professionally acceptable manner...." [9J-5.005 (2) (a)] In past, this provision has been construed as requiring use of the most recent Florida Department of Transportation Traffic Level of Service Manual or related software for road capacity analysis. As of January 1, 1996, the most recent manual was the 1995 manual. However, the Department of Community Affairs has also accepted from local governments in Dade County the use of analyses from the Metropolitan Dade County Office of Concurrency Management. Such is shown in Table 2.1.

Under Rule 9J-5, local comprehensive plans are required to adopt a roadway level of service standard which is coordinated with the standard adopted by the agency which has maintenance responsibility for the facility. Thus, localities must adopt the Florida Department of Transportation standard for state roads within the local boundaries and the county standard for county roads within their local boundaries. Dade County has adopted complex level of service standards which vary depending on the location of the facility within the county and the type of transit service available. For county roadways within the urban infill area (east of the Palmetto Expressway) and in special transportation areas, the standard is LOS E for roadways with no transit service; 120 percent of LOS E for roadways which have 20 minute headway transit service within one half mile; 150 percent of LOS E for roadways with extraordinary transit service (commuter rail or express buss). In implementing these standards, Dade County employs the concept of "peak hour period" (PHP) rather than "peak hour" as specified in Rule 9J-5. The peak hour period is defined by Dade County as the sum of the two consecutive highest hours divided by 2. "Special transportation areas" as employed by Dade County are defined in a letter from Mr. Mark R. Woerner, AICP to Mr. Robert K. Swarthout, AICP. A facsimile of this letter is reproduced as Figure 2.9 of this element. The Miami Springs Comprehensive Plan adopted in 1989 established a peak hour (not peak hour period) level of service D.

Analysis of Existing Road LOS [9J-5.019 (3) (a)]: Existing roadway levels of service for selected streets in and adjacent to City of Miami Springs are indicated in Tables 2.1 through 2.4. The locations of count stations referred to in these tables are shown in Figure 2.1. Count stations with numerical designations are used in the Dade County Concurrency Information Center. Count stations with letter designations are from special traffic engineering studies referred to herein. The most significant traffic problems are on N.W. 36th Street, Okeechobee Road and Le Jeune Road. Levels of service shown for these roads in Tables 2.1 through 2.3 range from C to F. The F condition is more common than it appears from the data presented here. The special studies from which much of this data came report additional F locations. N.W. 36th Street, Okeechobee Road and Le Jeune Road (in Miami Springs) have been the subject of special engi-

neering studies the findings of which are summarized below. Table 2.4 indicates that North Royal Poinciana Boulevard and South Royal Poinciana Boulevard both show level of service F near the Miami Springs Circle. The F condition for South Royal Poinciana Boulevard occurs at a point where the roadway consists of just two lanes. Further south the roadway becomes four lanes. The same traffic volumes would not produce an F condition on a four lane cross section.

Analysis of Existing Internal Road System Needs [9J-5.019 (3) (a)]: Roads that are completely within the City of Miami Springs must be maintained, but is not envisioned that they be widened. South and North Royal Poinciana Boulevard may be experiencing an F level of service for peak hour/peak direction traffic. It is not apparent that there is sufficient need to correct this deficiency by widening these roads; North Royal Poinciana was designated as a constrained roadway with a level of service standard of E in the 1989 Miami Springs Comprehensive Plan. A "constrained" roadway is a roadway that cannot practically be widened due to the narrowness of the right-of-way and the presence of development on either side. The Keith and Schnars study of Okeechobee Road (described below under the indented heading "Okeechobee Road") employed an origin-destination survey which found that nearly 3/4 and over 1/2 of the traffic on South and North Royal Poinciana Boulevard, respectively, is "cut-through." It is hoped that improvements to Okeechobee Road will reduce the desirability of using Royal Poinciana for cut through traffic. According to the same study of Okeechobee Road, cut through traffic is very heavy on East Drive (aka 4th Avenue) (75 percent) and Curtiss Parkway (45 to 58 percent).

Analysis of Existing Principal Arterial System Needs [9J-5.019 (3) (a)]: There is a need to upgrade N.W. 36th Street, which forms the southern boundary of Miami Springs, and Okeechobee Road, which lies just outside the northeast border of Miami Springs. Needed improvements to these roads are described in two separate studies, the finding of which are summarized as follows:

N.W. 36th Street:

A June 8, 1995 study prepared for the Dade County Metropolitan Planning Organization by Post, Buckley, Schuh & Jerinigan, Inc. offered the following conclusions and recommendations at page 4: 1) a toll-expressway for N.W. 36th Street is not cost feasible; 2) provide additional bus service along the "Kendall-West Dade-North Central Dade" corridor; 3) establish a West Dade Transportation Management Association made up of residents and business people; 4) construct a grade-separated urban interchange at N.W. 36th and N.W. 72nd Avenue [Milam Dairy Road]; 5) prepare an action plan for the Iron Triangle [N.W. 36th Street/Le Jeune Road/Okeechobee Road] to coordinate the needs of Miami Springs, the Miami Intermodal Center (MIC) and the Miami International Airport; 6) consider TSM improvements for the short term, Smart Street improvements for the medium term and an MIC/Interconnector improvements for the long term; 7) prepare a Miami Springs/Virginia Gardens access management plan which reduces the number of driveway access points and/or provides acceleration and deceleration lanes; 8) make pedestrian/bicycle improvements including pedestrian push buttons at signalized intersections, fifteen-foot curb lanes and continuous sidewalks; 9) install Intelligent Transportation Systems along the corridor; 10) construct minor improvements to improve traffic flows providing and/or relocating bus turnouts, adding and/or modifying acceleration and deceleration lanes and adding and/or modifying turning lanes.

Level of service findings from the N.W. 36th Street study are shown in Table 2.3. The Post, Buckley, Schuh & Jerinigan study followed an earlier study which failed to find a cost-feasibility way of extending the Airport Expressway to the Florida Turnpike, a concept which was and remains part of the long range transportation plan of Dade County. This earlier study concluded that such an extension would not meet the financial feasibility requirements established by Florida law for Turnpike projects.

Okeechobee Road:

An April 1995 preliminary engineering report prepared for the Florida Department of Transportation by Keith and Schnars, P.A. offered the following conclusions and recommendations at page 9.1: The existing corridor traffic volumes show an average daily traffic (ADT) of 45,200; the projected ADT for the Design Year, 2018, is 53,300. The design hour volume is 4,477. Currently, the project corridor operates at unacceptable levels of service. Okeechobee Road must be improved to a six-lane divided facility with auxiliary turn lanes at intersections in order to provide acceptable operating conditions based on FDOT Arterial Level of Service Standards in 2018. A depressed roadway at the Florida East Coast railroad crossing must be constructed. Two alternatives were identified for accomplishing the needed improvements. The alternatives differed significantly in width and location of the right of way to be acquired. Alternative A-1 incorporated wider typical sections, accommodated bicyclists and acquired more businesses and residences. Alternative C minimized physical and environmental impacts.

Analysis of Availability of Roads to Serve Existing Land Uses [9J-5.019 (3) (b)]: Roads are available to serve all existing land uses in the City of Miami Springs. Existing land uses are shown in Figure 1.1. Existing roads are shown in Figure 2.1. An examination of subdivision plats for the City revealed no "land-locked" parcels.

Analysis of Availability of Public Transit to Serve Existing Land Uses [9J-5.019 (3) (b)]: The current public transit network is shown on Figure 2.3. Bus and express bus service is available directly to Miami Springs; Metro-rail and Tri-rail service is accessible nearby. Transit service directly to the City of Miami Springs proper includes Metropolitan Dade County Bus Routes 36, 7 and 95. ***Metrobus Route 36*** runs along N.W. 36th Street/N.W. 41st Street from N.W. 87th Avenue to the east, connecting with Metrorail at the Allapattah Station, and with the Metromover at the Omni Station. The main route serves the Koger Industrial Office Park, while an alternate route serves the City of Miami Springs, Hook Square. ***Metrobus Route 7*** provides service from the City of Miami Springs to Downtown Miami. It runs along N.W. 36th Street/N.W. 41st Street from South Drive to Le Jeune Road. This route also provides services to the Miami International Airport terminal. ***Metrobus Route 95*** is an express route which runs along N.W. 36th Street and north and south on I-95. Peak headways for Route 7, Route 36 and Route 95 Express are 20 to 40 minutes, 20 to 60 minutes and 5 minutes, respectively.

Analysis of Growth Trends and Road Travel Patterns and the Interactions Between Land Uses and Roads [9J-5.019 (3) (d)]: There has been no substantial growth in Miami Springs during the last decade. Air traffic at Miami International Airport has grown substantially. This and other growth in other areas of Dade County has resulted in increased vehicular traffic on adjacent thoroughfares. The 1989 Miami Springs Traffic Circulation Element showed peak hour levels of service for selected streets in and adjacent to the City. The peak hour levels of service were calculated at 10 percent of average daily traffic. Average daily traffic counts were provided by Dade County and the Florida Department of Transportation District 6 office. Three thoroughfares were identified as operating at level of service E or F in 1989. These were: 1) Le Jeune Road from N.W. 36th Street to U.S. 27 (E); 2) North Royal Poinciana from Ludlam Road to Curtiss Parkway (F); U.S. 27 from Le Jeune Road to Ludlam Road (F). Existing roadway levels of service for selected streets in and adjacent to City of Miami Springs are indicated in Table 2.1, which shows counts on Okeechobee Road, on Le Jeune Road and one on N.W. 36th Street. The two count stations on Okeechobee Road are outside the City of Miami Springs. Count station 558 on Le Jeune Road shows level of service C. Count station 102 on N.W. 36th Street shows level of service D. The Dade County Traffic Circulation Element EAR indicates that level of service E is present in the vicinity of the Circle between Curtiss Parkway and Okeechobee Road.

Analysis of Compatibility Between Future Land Uses and Roads [9J-5.019 (3) (d)]: The pattern of development provided by the Future Land Use Map is reasonably compatible with existing and proposed roads for the following reasons subject to qualifications noted:

Commercial development abuts N.W. 36th Street which has an average daily traffic of over 40,000 vehicles. Commercial development is one of the most appropriate types of development to abut such a heavy-traffic thoroughfare. Existing lot and curb-cut patterns along N.W. 36th Street could be improved.

Single family and some multi-family residential development "back-lots" on the Miami River Canal which in turn abuts Okeechobee Road which has an average daily traffic of approximately 40,000 trips per day. Residential development back-lotting onto a principal arterial with a wide canal as a buffer is an adequate relationship. There is no conflict from curb cuts.

Traffic counts are not available for important streets within the City (Curtiss Parkway, Royal Poinciana Boulevard and Westward Drive), but observations by City officials indicate that these streets are always or nearly always at acceptable levels of service. For the most part they are abutted by residential development to which they provide access. Their level of traffic is reasonably compatible with the residential development they serve.

The concentration of commercial and multi-family development around and near the Circle where Curtiss, Poinciana and Westward Drive converge is an appropriate relationship.

Miami Springs is fully developed. There are few vacant lots. There is limited need or potential for redevelopment. Therefore, there is limited opportunity to fundamentally change the relationship between land uses and local roads.

During recent years, the Metropolitan Planning Organization has studied the feasibility of creating an expressway toll route along N.W. 36th Street from the end of the Airport Expressway (SR 112) west. Such a construction would be fundamentally incompatible with existing land uses along N.W. 36th Street in the City of Miami Springs. Fortunately, all studies to date have shown such a project to be financially unworkable.

The Miami Intermodal Center/Interconnector improvements will impact the "iron triangle" and the southeast corner of the City of Miami Springs. These improvements will have to be carefully designed to ensure minimum negative impact on the City.

The Miami International Airport is one of the largest employment center outside the City of Miami Central Business District. The airport generates high volumes of traffic and it diverts through traffic onto adjacent roadways.

The intersection/interchange of N.W. 36th Street, Le Jeune Road and the Airport Expressway is one of the most problematic in Dade County. The roadways which converge on this intersection/interchange are under study for improvements. There are currently three ongoing studies which all relate to this intersection/interchange: 1) N.W. 36th Street from Le Jeune Road to the Florida Turnpike; 2) the Miami Intermodal Center project; and 3) the Miami International Airport Master Plan Study. These studies are following separate tracks.

Analysis of Compatibility Between Future Land Uses and Rail Lines and Airports [9J-5.019 (3) (d)]: The pattern of development provided by the Future Land Use Map is reasonably compatible with the adjacent Miami International Airport (to the south) and the adjacent Florida East Coast Railroad Hialeah Yards (to the west). The most recent airport plan calls for a redeveloped maintenance/support area along the south side of N.W. 36th Street. There will be a new runway south of the redeveloped maintenance/support area.
The Florida East Coast (FEC) Railroad lies to the west of the Ludlam Canal which forms the west edge of the City. Upon petition of the City, the FEC constructed a substantial sound bar-

rier. This sound barrier is important to maintaining a minimal level of compatibility between the FEC yard and the nearby residential development in Miami Springs.

Analysis of Projected Road System Levels of Service and System Needs Based on Future Land Use Categories [9J-5.019 (3) (f)]: The future land use categories in Miami Springs will not significantly affect traffic volumes or levels of service on road segments wholly within the City limits. This is because the City is nearly completely developed. Level of service F (extremely congested) is anticipated for N.W. 36th Street by the year 2005, according to the Dade County Traffic Circulation Element EAR, Figure II-7; level of service F is also anticipated in 2005 for the south two thirds of Okeechobee Road opposite Miami Springs. Projected roadway levels of service for major roads adjacent to Miami Springs were developed based on: 1) the Year 2015 traffic volumes projections of the Metropolitan Planning; and 2) the 2015 "cost feasible" traffic network of the Metropolitan Planning Organization. For this element, the network in the "Draft Recommended Cost Feasible Plan" dated September 18, 1995 and the volumes in the "Draft Year 2015 Transportation Plan" dated November 28, 1995 were used. These are subject to future revision. The results of this analysis are presented in Table 2.5. They show that most non local roads within and adjacent to Miami Springs are anticipated to operate at level of service "F" in 2015. Some of the roads will be deep into "F." It is important to be aware that the "F" conditions are all due to projected regional growth in general and more intensive development near Miami Springs, but not growth within the municipal boundaries of Miami Springs.

Consideration of Planned Projects [9J-5.019 (3) (g)]: Projects planned by the FDOT Adopted Work Program, long range transportation plan and transportation improvement program of the MPO are set forth in Table 2.6. These projects are fully compatible with this element. It should be noted that ***planned projects include the widening of Okeechobee Road to six lanes; no other major roads will be widened.*** A major alteration to the current road system will occur in connection with development of the Miami Intermodal Center (MIC). MIC options under study are shown on Figures 2.7 and 2.8.

Demonstration of how Miami Springs will Maintain its Adopted LOS Standards for Roads [9J-5.019 (3) (h)]: The traffic level of service standards in the 1989 Miami Springs Comprehensive Plan are the same as previously approved by the Florida Department of Community Affairs for Dade County. A post-1989 amendment to the Dade County Comprehensive Plan established a Transportation Concurrency Exception Area in the portion of un-incorporated Dade County within the Urban Infill Area. Within that portion of un-incorporated Dade County, a proposed development is not subject to the requirements of Rule 9J-5.0055 (3) (c) 1-4. Proposed developments are exempt from satisfying Transportation concurrencey requirements for purposes of issuing development orders. Since this new and lower standard was approved for unincorporated portions of Dade County by the Florida Department of Community Affairs, it should also be approved for Miami Springs, at least for the major roads which will be more heavily loaded by general conditions than by conditions within Miami Springs. These roads surely include N.W. 36th Street, Okeechobee Road and Le Jeune Road. Miami Springs will seek approval for the same road LOS standard as has been approved for Dade County. Miami Springs will endeavor to maintain this standard once adopted, by limiting development to the densities and intensities indicated in the Future Land Use Map. Miami Springs does not expect that these densities and intensities will result in development which is significantly greater than that which is now in place. Thus development in Miami Springs will not contribute significantly to the lower level of service projected for its roads and adjacent roads in Table 2.5. Further, Miami Springs will maintain its adopted traffic level of service standards through a concurrency management system. The system will be designed to ensure that new developments will not be approved if they would cause the actual level of service on roadways to deteriorate below the adopted standard.

Demonstration of how Miami Springs will Maintain its Adopted LOS Standards for Transit Facilities [9J-5.019 (3) (h)]: Miami Springs provides no transit facilities or services. Miami Springs will adopt level of service standards for transit because it is required to do so by Rule 9J-5.019 (4) (c) 1. It will adopt standards which are identical to or nearly identical to those adopted by Dade County. Miami Springs will seek to maintain its adopted level of service standards by cooperating to the extent feasible with the efforts of Dade County to provide transit service. Also, The City will maintain its adopted transit levels of service by encouraging development at the permitted densities in order to provide at least minimally acceptable concentrations of potential transit users.

Demonstration of how the Miami Springs Adopted LOS Standards Reflect and Advance the Purpose of the Goals, Objectives and Policies of the Land Use Element and all Other Elements of the Comprehensive Plan [9J-5.019 (3) (h)]: Based on conditions at the time this comprehensive plan was prepared, it is believed that the proposed 1996 Miami Springs level of service standards will enable reasonable development on the few remaining vacant parcels and reasonable redevelopment on parcels with redevelopment potential. Allowing such development and redevelopment (indeed encouraging it) is the primary purpose of the comprehensive plan in general, and of the land use element in particular. Allowing such development and redevelopment will not significantly degrade service on roads which lie primarily within Miami Springs or adjacent to it. The most important of these roads surely include N.W. 36th Street, Okeechobee Road and Le Jeune Road. The adopted LOS for roads and transit services are not inconsistent in any discernible way with any of the other goals, objectives and policies of this Comprehensive Plan. The Rule 9J-5.019 (3) (h) requirement that the transportation element data and analysis demonstrate how the adopted traffic and transit LOS standards reflect and advance the purpose of the goals, objectives and policies of all elements of the plan could be read to mean that each such goal, objective and policy must be examined in light of the traffic and transit LOS standards. Such would be a Sisyphean task since most to the goals, objectives and policies are not specifically related to the traffic and transit LOS, at least in the case of Miami Springs.

Demonstration of how the Miami Springs Adopted LOS Standards Reflect and Advance the Purpose of Rule 9J-5.019 [9J-5.019 (3) (h)]: Rule 9J-5.019 (1), entitled "Application and Purpose," states that, "The purpose of the transportation element shall be to plan for a multimodal transportation system that places emphasis on public transportation systems." Rule 9J-5.019 (1) likely means that this too is its own purpose. To accomplish its purpose, Rule 9J-5.019 requires small developed cities which do not provide transit service (*e.g.* Miami Springs) to prepare transportation elements, rather than just traffic circulation elements as was required in the past. Since the proposed 1996 Miami Springs traffic and transit LOS standards reflect the LOS standards adopted by Dade County, it is the intent herein to rely on and cite the applicable portion of the Dade County EAR-based Transportation Element data and analysis to explain how the adopted LOS standards reflect and advance the purpose of Rule 9J-5.019.

Internal Consistency [9J-5.019 (3) (i)]: The referenced portion of Rule 9J-5 requires that the transportation element explicitly address and document the internal consistency of the plan, especially its provisions addressing transportation, land use and availability of facilities and services. The Miami Springs level of service standards enable reasonable development on the few remaining vacant parcels and reasonable redevelopment on parcels with redevelopment potential.

RESPONSES TO DEPARTMENT OF COMMUNITY AFFAIRS OBJECTIONS, RECOMMENDATIONS AND COMMENTS

The Florida Department of Community Affairs Objections, Recommendations and Comments (ORC) Report on the June 23, 1997 first reading version of the transportation element is reproduced as Exhibit 2.1. In a February 9, 1998 telephone consultation between Mr. Steve Johnson of the City of Miami Springs and Mr. Paul DiGiuseppe of the Florida Department of Community Affairs, Mr. DiGiuseppe characterized the transportation component of the ORC as consisting of, at least in part, "boiler plate" which is not the most current boiler plate being used by DCA. Mr. DiGiuseppe provided the City with the material in Exhibit 2.2, which he characterized as more up-to-date "boiler plate." Both sets of "boiler plate" were considered in preparing the material below. The boiler plate associated with the official ORC report is the basis upon which the material below is organized. Responses to the 22 transportation related objections and recommendations are set forth below.

"Holistic" Format and Delayed Adoption (Objection and Recommendation 1)

The Department found that the Miami Springs transportation element was not adopted in an "holistic" format. A similar objection was raised to the format of the Dade County EAR-based comprehensive plan amendments. Under a cover letter from Charles G. Pattison dated August 23, 1996, the ORC for Dade County commented that "Objectives continue to focus on individual transportation modes and do not address the transportation system as an integrated whole..." Among the related deficiencies found by DCA in the Dade County transportation element were deficiencies pertaining to "the provision for a safe, convenient, and ***energy efficient*** [emphasis added] multimodal transportation system." In other words, the Dade County transportation element was found by DCA to put insufficient emphasis on public transit as a mode of transportation. The Dade County response to this DCA objection is relevant to Miami Springs. The Dade County response states, in part,

> Dade County, without question, has developed the most integrated and multi-modal transportation system of any metropolitan area in the State of Florida, and whose only contemporary rival in the southeastern United States may be metropolitan Atlanta, Georgia. Every conceivable form or mode of transportation is available in Dade County to serve residents, visitors and businesses. While this system is composed of a variety of separate modes it is coordinated and planned to be a seamless, integrated system. As evidenced by the many proposals contained in the proposed Transportation Element, the County is striving to reach full integration of its multimodal components.
>
> The objection stated above seems to emphasize the Department's overall concern that Dade County's proposed Transportation Element, to be comprised of the existing Traffic Circulation, Mass Transit, and Port and Aviation Elements, combined as subelements and supplemented, does not represent an integrated multi-modal plan. Neither the statute (s.163.3177 (6) (j), F.S.) nor the rule (9J-5.019, F.A.C.) specify any particular format requirement, and no model element is provided. However, the Statute and Rule do identify the individual modes to be considered in preparing the element, and require that individual modal characteristics of the existing and planned transportation system must be depicted and analyzed. (See s.9J-5.019 (2) and (3), F.A.C.).
>
> Moreover, the state of the art for transportation modeling, not only statewide but nationally as well, is to analyze existing and forecasted travel demand for only two networks - highway and transit. The Florida Standard Urban Transportation Model Structure (FSUTMS) is the standard travel demand model used throughout Florida and it is characterized by the same constraints noted above. Moreover, it is not sensitive to micro-scale land use and design characteristics and it generally extrapolates current behavor. In other words, highway, transit and other non-motorized system components can not be analyzed simultaneously as a timely integrated multimodal system. In addition, FSUTMS is not structured as an integrated land use/transportation model, and analyses to test travel changes based on different

land use scenarios is labor and data intensive and generally unfunded. If the State desires to have local comprehensive plans reflect truly integrated transportation systems, the statewide transportation planning process needs to be modified to produce the desired tools and information.

Since the above quoted remarks were submitted by Dade County to DCA, Dade County reports[1] that DCA has asked the County to make a commitment in its comprehensive plan to undertake a coordinated land use/transportation planning study. Apparently DCA thinks that such a study is necessary in order to determine the densities appropriate for each transit corridor in Dade County. Dade County expects to use the Florida Standard Urban Transportation Model System (FSUTMS) for the required study, even though this computerized model is one of the simpler computer models now in use. One of the FSUTMS weaknesses is its inaccuracy for projecting link volumes and levels of service, particularly for any substantial time into the future. FSUTMS is considered to have been acceptably applied if existing input data produces an output that is within twenty percent of actual existing link volume. Sometimes, even this standard is difficult to achieve for some links in a complex system. Thus, the model is a poor tool for evaluating small scale urban land use changes. However, there is not much evidence that even the most advanced computerized modeling systems could produce improved results. Dade County expects to reconfigure the Dade County traffic analysis zone map so that transit stops are not at the juncture of four traffic analysis zones as is now often the case. According to Dade County, this will be done in the context of a "minor" update in the long range transportation plan. This update likely will be prepared sometime in 1998 or 1999.

As a remedy for the lack of a "holistic" format, DCA has recommended that Miami Springs postpone adoption of its transportation element or adopt an interim element. It is not apparent from the ORC document how postponement or interim adoption of the transportation element will remedy the lack of an holistic transportation element, although it is understandable that DCA may not want to approve the Miami Springs transportation element until it sees how much it can get Dade County to agree to. It also makes sense for Miami Springs to follow the lead of Dade County as Dade County resolves its problems with DCA. The resolution of such problems is costly and time consuming.

Modal Split, Vehicle Occupancy Rates, Public Transit Facilities, Public Transit Ridership by Route, Peak Hour Capacities, Population Characteristics (Objection and Recommendation 2)

The ORC finds the Miami Springs transportation element deficient in the amount of data and analysis it provides with respect to the subjects enumerated in the above heading. The ORC Report recommends that the analysis be expanded. The data and analysis requested is difficult to obtain and of marginal significance in the context of the Miami Springs comprehensive plan since: 1) Miami Springs has limited opportunities to modify the land use pattern so that it places smaller demands upon the road system and at the same time provides more customers for the public transit system; 2) Miami Springs has absolutely no control over the Dade County bus system and other Dade County transit services; and 3) no existing or planned fixed rail transit facilities are located where they can conveniently serve Miami Springs. Such information as is available is presented below.

Modal Split: Recently published data on modal split can be found in the June 1996 *Transit Development Program* of Dade County, as approved by the Dade County Metropolitan Planning Organization. Figures I-9 and I-10 of that document report "modal splits" of 2.0 percent to 2.9 percent for trips originating in Miami Springs and 0.0 to 1.9 percent for trips ending in Miami Springs. This means that not many people ride the bus. None of the traffic analysis zones surrounding Miami Springs have a modal split greater than the 3.0 to 4.9 percent range. The report

[1] All references to Dade County from this point forward in the transportation element data and analysis are based on telephone consultations between Mr. Robert Swarthout and Mr. Mark Woorner of Dade County, unless otherwise noted. The telephone consultations occurred in January and February 1998.

indicates that the modal split data on Figures I-9 and I-10 comes from the 1990 U.S. Census. More detailed modal split information is difficult to obtain according to Rutgers Professor John Pucher, who has observed that "[I]t is difficult to assemble comparable modal split distributions; these data are almost never available on a regular annual basis, but rather once or twice per decade for most countries."[2] For Dade County, the last survey of modal split data known to Metropolitan Planning Organization planners[3] was assembled for a report dated February 1987 and titled *Southeast Florida Travel Characteristics Evaluation Study, Technical Report 1.* At page 6-42, this report sets forth mode choice for Dade County as 94.1 percent auto, 4.41 percent public transit and 1.49 percent school bus. This data appears with data for Broward County (97.75 percent auto) and Palm Beach County (98.48 percent auto). According to the Metropolitan Transit Agency, the survey from which this data was taken may have included an insufficiently large sample to be accurate at the County level, though it is probably accurate at the tri-county level. Low transit use is characteristic of the United States. According to Professor Pucher, in the United States only three percent of urban passenger transportation was by public transit as of the date of his study.[4] Also according to Professor Pucher, the public transport share of passenger transportation was ***declining*** in the United States, and eleven of thirteen other countries for which he reported data.[5] Professor Pucher's findings lead him to the conclusion that only a high level of socialism is likely to produce a high degree of public transit use; in Professor Pucher's words,

> Governments in virtually all countries have expressed their preferences in urban transportation by differentially subsidizing and taxing the various modes of transportation, and also by promoting or discouraging the types of land use and urban development that depnd on and foster alternative transportation systems. Socialist governments have strongly supported public transport. By contrast, the more market-oriented a country's economy, the more it has neglected public transport, and instead subsidized highway construction, auto use, and suburbanization.[6]

Further commentary on the difficulty of maintaining the current modal split is provided by James Q. Wilson, Collins Professor of Management and Public Policy at UCLA. According to Professor Wilson,

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[2] Pucher, John "Capitalism, Socialism, and Urban Transprotation," *APA Journal*, Volume 56, Number 3, Summer 1990, page 278.

[3] All references to the Metropolitan Transit Agency from this point forward in the transportation element data and analysis are based on telephone consultations between Mr. Robert Swarthout and Mr. Frank Baron of the MTA, unless otherwise noted. The telephone consultations occurred in January and February 1998.

[4] Pucher, John "Capitalism, Socialism, and Urban Transprotation," *APA Journal*, Volume 56, Number 3, Summer 1990, page 282.

[5] Pucher, John "Capitalism, Socialism, and Urban Transprotation," *APA Journal*, Volume 56, Number 3, Summer 1990, page 284.

[6] Pucher, John "Capitalism, Socialism, and Urban Transportation," *APA Journal*, Volume 56, Number 3, Summer 1990, page 284. Professor Pucher's observation that socialism is required in order for a high percentage of trips to rely on public transit rather than private automobiles is supported by an interesting and related fact reported by David Horowitz on page 99 of *The Politics of Bad Faith*. Mr. Horowitz states that "...blacks in apartheid South Africa owned more cars per capita than did citizens of the socialist state [*i.e.* the Soviet Union prior to its demise]." Mr. Horowitz provides general citations which apply to this quote and a range of similar observations. An incomplete search of these citations and related sources revealed support for the proposition that non-white South Africans under the apartheid regime had the advantage with respect to auto ownership over citizens of the Soviet Union under the now defunct socialist regime. According to page 851 of the 1994 *Statistical Abstract of the World* blacks represented 75.2 percent of the total population of South Africa, other non-whites represented 11.2 percent and whites represented 13.6 percent. According to pages 66, 67, 70, 702 and 703 of the United Nations *Statistical Year Book 1989/90* the ratio of *total* vehicles in use to population for the Soviet Union was 16,562,000/286,478,000 or 57.8 total vehicles per 1,000 people; the ratio of *passenger* vehicles in use to population for South Africa was 3,498,200/34,509,000 or 101.4 passenger (not total) vehicles per 1,000 people; and the ratio of *passenger* vehicles in use to population for the United States was 137,323,000/248,762,000 or 552.0 passenger (not total) vehicles per 1,000 people. If the white population of South Africa owned the same number of passenger vehicles per 1,000 people as did the population of the United States (Why would they want more?), then the non-white population of South Africa would have owned 106 passenger vehicles per 1,000 people, *i.e.* about one and three-fourths times as many *passenger vehicles* per 1,000 people as the Soviet Union had *total vehicles* per 1,000 people. Some of the numbers reported here are estimates for years ranging from 1987-1989. For confirmation of the information in this footnote the following may be consulted: 1) Horowitz, David. *The Politics of Bad Faith* (The Free Press:New York) 1998; 2) Reddy, Marlita A., ed. *Statistical Abstract of the World* (Gale Research, Inc.:Detroit) 1994; 3) United Nations Department of Economic and Social Development. *Statistical Yearbook 1989/90* (United Nations:New York) 1991.

Despite...criticisms...the use of the automobile has grown. In 1960, one-fifth of all households owned no car and only one-fifth owned two; by 1990, only one-tenth owned no car and over one-third owned two. In 1969, 80 percent of all urban trips involved a car and only one-twentieth involved public transport; by 1990, car use had risen to 84 percent and public transit had fallen to less than 3 percent. In 1990, three-fourths or more of the trips to and from work in nineteen out of our twenty largest metropolitan areas were by a single person in an automobile. The exception was the New York metropolitan region, but even there--with an elaborate mass-transit system and a residential concentration high enough to make it possible for some people to walk to work--solo car use made up over half of all trips to work.

Some critics explain this American fascination with the car as the unhappy consequence of public policies that make auto use more attractive than the alternatives...[I]f only we taxed gasoline at a high enough rate..., if only we had an elaborate mass-transit system....., if only we placed major restraints on building suburbs on open land, if only we placed heavy restrictions on downtown parking, then things would be better.

Would they? Charles Lave, an economist at the University of California at Irvine, has pointed out that most of Western Europe has long had just these sorts of anti-auto policies in effect. The result? Between 1965 and 1987, the growth in the number of autos per capita has been three times faster in Western Europe than in the United States... Despite policies that penalize car use, make travel very expensive, and restrict parking spaces, Europeans, once they can afford to do so, buy cars, and drive them... One result is obvious: the heavily subsidized trains in Europe are losing business to cars, and governments there must pay an even larger share of the running cost to keep the trains moving.

In fact, the United States has tried to copy the European investment in mass transit... Relentlessly, transportation planners have struggled to find ways of getting people out of their cars and into buses, trains, and subways (and car pools). Relentlessly, and unsuccessfully. Despite spending about $100 billion, Washington has yet to figure out how to do it.

[For example, between] 1980 and 1990, while the Washington, DC Metrorail system grew from 30 to 73 miles of line and opened an additional 30 stations, the number of people driving to work increased from 980,000 to 1,394,000, and the transit share of all commutes declined.

The European experience should explain why this is so: if people can afford it, they will want to purchase convenience, flexibility, and privacy. These facts are as close to a Law of Nature as one can get in the transportation business. When the industrial world became prosperous, people bought cars. It is unstoppable.[7]

Vehicle Occupancy: For Dade County, the last survey of vehicle occupancy data known to Metropolitan Planning Organization was assembled for a report dated February 1987 and titled *Southeast Florida Travel Characteristics Evaluation Study, Technical Report 1*. At page 6-44, this report sets forth vehicle occupancy for Dade County as 1.33 to 1.73 depending on the nature of the trip, *i.e.* home to work, home to shopping, *etc.*

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[7] Wilson, James Q., "Cars and Their Enemies," *Commentary*, July 1997. Professor Wilson's observations are supported by anecdotal evidence from a recent best-selling non-fiction book entitled *Under the Tuscan Sun, at Home in Italy* by Frances Mayes, a member of the faculty at San Francisco State University. Ms Mayes describes her summer-time experiences restoring a "green zone" / "*belle arti* zone" farm house. At pages 77-78 she quotes expatriates Fnella and Max on the contrast between life in Rome during the 1950s and the 1990s,

> [Fnella gushes] "You can't imagine what Rome was in the fifties. Magic. I simply fell in love--like you fall in love with a person--and schemed to find a way to stay there. It wasn't easy. I got on as a stringer for Reuthers. Look at the old movies and you'll see there were almost *no cars* [emphasis added]. This was not long after the war and Italy was devastated, but the *life*! It was unbelievably cheap, too. Of course we didn't have much money but we lived in enormous apartments in grand *palazzi* for nothing....You didn't come along in time to know Rome back then. It's terrible now. But then it was irresistible." I suddenly realize they're in double exile, from the United States and from Rome.
>
> Max joins in. He had to go to Rome last week and *the traffic was horrendous* [emphasis added], then the gypsies accosted him...

From this dialogue alone one should not speculate that 20 years of Mussolini-style socialism culminated by a devastating war might be required to satisfy those intellectuals who are now dissatisfied with the amount of traffic on the streets of the world's major urban areas. For more see: Mayes, Frances. *Under the Tuscan Sun, at Home in Italy* (Broadway Books:New York) 1996.

Transit Facilities: Transit services are set forth in Figure 2.3. Options for the proposed multimodal facility to be located near Miami Springs are presented and discussed in Figures 2.7 and 2.8. Existing and future rapid transit lines as envisioned by Dade County are depicted in Figure 2.10. No rail stations are situated within Miami Springs. The Okachobee Metrorail Station and the Airport Tri-Rail Station are both across the C-6 Canal/Miami River from Miami Springs. They are both situated within industrial areas within the City of Hialeah and are too remote from any part of the City of Miami Springs to affect land use in Miami Springs.

Public Transit Ridership by Route: Metrobus routes serving Miami Springs include Route 7, Route 36 and Route 95. According to ridership reports supplied by the Metropolitan Transit Authority, these routes had ***boardings in October*** of 1997 of 105,878 passengers, 102,676 passengers, and 31,485 passengers, respectively. Of course not all of these boardings are for trips which originate or terminate in Miami Springs. Furthermore, these boardings represent a trivial amount of the trips that occur on the major thoroughfares over which Routes 7, 36 and 95 run. For example, there are about 50,000 ***trips per day*** on N.W. 36th Street in the vicinity of Miami Springs. If each of these trips has an average of 1.5 passengers, then 50 percent more people travel in automobiles over N.W. 36th street in two typical week days than travel over it in a bus in one month. According to reports supplied by the Dade County Transit Authority, the efficiency of Routes 7, 36 and 95 varies. In October 1997, Route 7 recovered in fare revenue 53.3 percent of its direct operating costs; Route 36 recovered 49.4 percent and Route 95 recovered 30.0 percent. These recovery ratios put Routes 7, 36 and 95 below the average for the class of routes in which they fall, *i.e.* weekday service AM peak headway 16-30 minutes (Route 7), weekday service AM peak headway 0-15 minutes (Route 36) and weekday service express/shuttle (Route 95). The low fare recovery ratios do not tell the full story of the transit inefficiencies that these routes entail. Overall, Metro Dade Transit Agency subsidies represented 65.8 percent of total revenues in 1995 and about the same percent of total revenues for each year between 1991 and 1995, according to Page II-27 of the 1996 *Transit Development Program*. This is typical of public transit systems. The readily available professional literature indicates that public transit systems throughout the world operate at deficits, sometimes massive deficits. For example, Rutgers Professor John Pucher reported that in 1988 the level of subsidy in the United States was 63 percent; that eight other Western countries had lower average subsidies, the lowest being Switzerland's 28 percent; and that three other Western countries had a higher subsidy, the highest being the Netherlands' 78 percent.[8] The fact that the entire Dade County transit system operates at a massive deficit and the fact that Routes 7, 36 and 95 operate at deficits that are even larger than the average suggests that the system and the routes may have excess capacity which could accommodate passengers who now travel by car, if only private vehicular travel could be made relatively less attractive by one means or another. Unfortunately, the comments of Professor Wilson quoted above tend to undermine faith that the currently unproductive buses will soon carry sufficient passengers to be productive.

Peak Hour Capacities: Peak hour roadway capacities are reported in Tables 2.1 and 2.5. "Capacity" is a function of the level of service standard selected to measure capacity. Dade County currently has a legislatively adopted level of service capacity for N.W. 36th Street of E plus 50 percent, and thus Dade County has made a political determination that N.W. 36th Street had additional capacity as of April 1995, the most recent count date consulted for this report. Additional observations on or related to peak hour capacity appear earlier in this element under the following headings: "Roadway Levels of Service Standards," "Analysis of Existing Road LOS," "Analysis of Existing Internal Road System Needs," "Analysis of Existing Principal Arterial System Needs," "Analysis of Availability of Public Transit to Serve Existing Land Uses," "Analysis of Growth Trends and Road Travel Patterns and the interactions Between Land Uses and Roads," "Analysis of Compatibility between Future Land Uses and Roads," "Analysis of Projected Road System Levels of Service and System Needs Based on Future Land Use Categories," "Demonstration of how Miami Springs will Maintain its Adopted LOS Standards for Roads," "Demonstration of how Miami Springs will Maintain its Adopted LOS Standards for Transit Facilities," "Demonstration of how the Miami Springs Adopted LOS Standards Reflect and Advance the Purpose of the Goals, Objectives and Polices of the Land Use Element and all Other Ele-

[8] Pucher, John "Urban Travel Behavior as the Outcome of Public Policy," *APA Journal*, Volume 54, Number 4, Autumn 1988, page 511.

ments of the Comprehensive Plan," and "Demonstration of how the Miami Springs Adopted LOS Standards Reflect and Advance the Purpose of Rule 9J-5.19."

Population Characteristics: Miami Springs had a 1990 permanent population of 13,268 and a projected 2015 permanent population of 12,646, according to Dade County. The projected year 2000 "transit dependent population" for Miami Springs was somewhere between 200 and 600 people, according to Figure I-3 of the June 1996 *Transit Development Program.* Two hundred people amount to less than two percent of the City's projected year 2015 population and six hundred people amount to less than 5 percent of the City's projected year 2015 population. For Dade County as a whole, it is estimated that 14.2 percent of the population is transit dependent, according to page I-1 of the June 1996 *Transit Development Program.* The 14.2 percent projection "assumes that automobile-ownership levels will remain relatively constant between 1990 and 2000." If they do so, they will make Dade County unusual. The readily available professional literature suggests that automobile ownership is increasing in the United States and throughout the world. It is increasing fastest in areas which have relatively fewer cars per capita. For example, Rutgers Professor John Pucher reported in 1990 that automobile ownership showed a consistent pattern of increase from the years 1950 through 1987 for 17 Eastern Block and Western countries. Change was reported for each of the 17 countries for the intervals 1950-60, 1960-70, 1970-80 and 1980-87. Professor Pucher's data show an increase in automobile ownership for each of the 17 countries for each interval. In the case of the Netherlands, which as noted earlier provides high subsidy levels for mass transit, automobile ownership increased from 307 to 348 per 1,000 population in the 1980-1987 interval, an average annual increase of 1.8 percent compounded.[9]

"Inconsistency" of Data in Tables 2.1 and 2.2 (Objection and Recommendation 3)

The Department of Transportation and the Department of Community Affairs notes that traffic data is presented in a different format in Table 2.1 from that of Table 2.2. The preparers of the Miami Springs comprehensive plan think that it would be more appropriate to characterize the data as different in form and time of collection rather than "inconsistent." If the Florida Department of Transportation and the Department of Community Affairs thinks that such differences constitute an unacceptable inconsistency, one possible accommodation would be to suppress that form of the data that most offends, or least pleases, the reviewing agencies. Those agencies could accept Tables 2.1 and 2.2 as different sources of data or they can specify the particular source they wish suppressed pursuant to Notice of Intent findings.

Nine Percent Directional Factor (Objection and Recommendation 4)

In its Objections, Recommendations and Comments Report, the Florida Department of Community Affairs objected to the data and analysis for the June 23, 1997 first reading version of the Miami Spring de novo comprehensive plan, commenting as follows:

> 4) Objection: FDOT raised an objection that the projected 2015 Peak Hour Peak Direction values are based upon an adjustment factor of nine percent. The footnotes for the 2015 estimates do not provide any explanation as to why nine percent of the Average Daily Trips (ADT) was utilized. [Rule 9J-5.005 (2) (a), F.A.C.]
>
> Recommendation: FDOT recommends that documentation must be provided to substantiate the assertion that Peak Hour Peak Direction is nine percent of ADT.

[9] Pucher, John "Capitalism, Socialism, and Urban Transportation," *APA Journal*, Volume 56, Number 3, Summer 1990, page 281.

In order to substantiate the nine percent assertion, the City of Miami Springs offers the following quote:

> The City has developed a Transportation Element to incorporate the new requirements of Rule 9J-5. Consistent with Dade County, LOS is analyzed using peak hour period which is the average of the two consecutive highest hours. Projected LOS is based upon an assumption that nine percent (9%) of the projected peak direction ADT will occur during the peak hour peak direction. This assumption which is intended to serve as a ratio of peak hour traffic to daily traffic is usually considered the K Factor.

This quote comes from an October 6, 1997 memorandum to Phil Steinmiller, FDOT Planning Office, District VI from Walter H. Keller, PE, AICP. This memorandum was included with the Objections, Recommendations and Comments Report sent by the Department of Community Affairs to the City of Miami Springs. Walter H. Keller is known in south Florida to be a competent traffic engineer with a quarter century or more of experience. Apparently, Walter H. Keller, Incorporated was contracted by FDOT to review the Miami Springs transportation element. It is hoped that Mr. Keller's comments quoted above are sufficient foundation for accepting nine percent as a factor for converting ADT to peak hour traffic. It is also noted that Mr. Jackson Ahlstedt, PE reviewed the transportation element as originally drafted by Robert K. Swarthout, Incorporated. Mr. Ahlstedt found no basis for objecting to the nine percent factor. Mr. Ahlstedt serves Miami Springs as a traffic engineering consultant on an ongoing basis.

It is unknown why the Department of Transportation and the Department of Community Affairs has reservations about the use of a nine percent directional factor given the fact that the year 2015 projections to which it is applied are believed by conventional wisdom in the planning profession to be suitable for projecting overall road usage but totally unrealible for application to individual road segments. This opinion was expressed by Dade County and by the Metropolitan Transit Authority to the preparers of this document. Also, the Metropolitan Planning Organization's *Transit/Land Use Relationship Report* has observed:

> The final product of a land use allocation model will be projected traffic volumes correlated against various land use scenarios. Given the long-range nature of long-range regional models, specific traffic engineering information (i.e., volume/capacity ratios by lane group and amount of delay) will not be available.[10]

The *Transit/Land Use Relationship Report* characterizes the land use allocation model as a more sophisticated model than the Florida Standard Urban Transportation Model System which was used to develop the projections shown in Table 2.5. The unsuitability of the Florida Standard Urban Transportation Model System for long range projection of specific link volumes is indicated by the fact that the model is considered adequately calibrated when input data about existing socio economic and land use characteristics will produce link volume outputs within 20 percent of actual recorded trips. The *Transit/Land Use Relationship Report* is characterized by the Florida Department of Transportation as a Professionally Correct (PC) resource, at least according to Miami Springs ORC objection and recommendation number 7 pertaining to the transportation element. The *Transit/Land Use Relationship Report* is summarized in Exhibit 2.3.

Additional Analysis of the Availability of Existing Transportation Facilities to Serve Existing Land Uses (Objection and Recommendation 5)

Rule 9J-5.019 (3) (b) requires that local comprehensive plans include "An analysis of the availability of transportation facilities and services to serve existing land uses." Such an analysis was provided in the data and analysis which accompanied the transmittal draft of the Miami Springs comprehensive plan. However, according to objection and recommendation number 5, the Flor-

[10] Gannett Fleming, Inc. Transit/Land Use Relationship Report for the Dade County Metropolitan Planning Organization, December 1995, page 4-6.

ida Department of Community Affairs expects the Miami Springs analysis to determine whether or not such services are ***adequate***. Under Rule 9J-5, adequacy is determined by whether or not the services meet locally established level of service standards. Locally established level of service standards must themselves be "appropriate" in the eyes of the Florida Department of Community Affairs and they must conform to the standard adopted by the provider of the service. Thus Miami Springs must adopt the same mass transit level of service standard as does Dade County since transit services are provided to Miami Springs by the Metropolitan Dade County Transit Authority. As of March 1, 1998, the Dade County transit level of service was set forth in Objective 1 and Policy 1A of the Dade County Mass Transit Element. Objective 1 and Policy 1A read as follows:

> Objective 1: By the year 2000, the mass transit system shall operate at a level of service no lower than the standard contained herein.
>
> Policy1A. The minimum peak-hour mass transit level-of-service shall be that all areas within the Urban Development Boundary (UDB) of the Land Use Plan (LUP) which have a combined resident and work force population of more than 10,000 persons per square mile shall be provided with public transit service having 60 minute headways and an average route spacing of one mile provided that:
>
> 1) The average combined population and employment density along the corridor between the existing transit network and the area of expansion exceeds 4,000 per square mile, and the corridor is 0.5 miles on either side of any necessary new routes or route extensions to the area of expansion;
>
> 2) It is estimated that there is sufficient demand to warrant the service;
>
> 3) The service is economically feasible; and
>
> 4) The expansion of transit service into new areas is not provided at the detriment of existing or planned services in higher density areas with greater need.

According to Dade County, the above transit standard is a very low standard, and it is so intentionally. Dade County did not want an adopted transit standard that might be unachievable in some locations and thus curb development. The bus service area covers most of the developed area of Dade County. The standard is easily met.

The Dade County transit level of service standard is like all other comprehensive plan level of service standards in that Rule 9J-5 and the Florida Department of Community Affairs require that development orders not be issued when the standard is not met. There is a certain logic to this approach as applied to some kinds of facilities such as roads: it makes sense to prohibit a development that would put more traffic on an already overburdened road. However, it does not necessarily make sense to prohibit a particular development when transit levels of service are not met, at least given the fact that prevailing professional opinion holds that transit services are more readily improved when densities and intensities of development are increased. This opinion is expressed throughout the *Transit/Land Use Relationship Report,* a document which is characterizes by the Florida Department of Transportation as a Professionally Correct (PC) resource, at least according to Miami Springs ORC objection and recommendation number 7 pertaining to the transportation element (see Exhibit 2.1).

The above quoted transit level of service for Dade County is subject to change. As of March 1, 1998, Dade County had had its EAR-based comprehensive plan amendments approved by DCA, except for the transit element. As of March 1, 1998, Dade County and DCA were negotiating modifications to the county's transportation element. According to Dade County, DCA was asking Dade County to commit to performing, at some time in the future, a planning analysis which could lead to higher permitted densities on the future land use map in areas served by transit, particularly fixed rail transit.

Integrated Land Use-Transportation Analysis
(Objection and Recommendation 7)

By way of objection and recommendation 7, DCA has stated that the City should,

> Analyze the FLUM densities, intensities and mixed use patterns against the thresholds required to support transit. The City should compare the existing FLUM designations within the transit corridor to a professionally correct [PC] source which has analyzed densities and intensities which support transit. One such document is the Dade County MPO document "Transit/Land Use Relationship Report." Where incompatible uses occur, an analysis should be conducted that assessed FLUM alternative that would be compatible. This should be completed prior to the Dade County MPO Long Range Transportation Plan Model Update...

The professionally correct (PC) source mentioned above (*Transit/Land Use Relationship Report*) appears in summary form as Exhibit 2.3. It articulates a range of land use types and a range of land use densities and intensities which the authors of the report believe will support public transit by generating more ridership. At pages 2-13 through 2-15, that report calls for Dade County to consider higher densities along transit routes and particularly in Metropolitan Activity Centers than currently permitted. At the time of the *Transit/Land Use Relationship Report,* the Dade County Comprehensive Plan called for floor area ratio intensities of 3.0 in the core of Metropolitan Activity Centers and not less than 0.75 at the edge. The portion of Miami Springs south of NW 36th Avenue is near the edge of a Dade County designated Metropolitan Activity Center. Thus, according to the intensity standards of the *Transit/Land Use Relationships Report*, Miami Springs provided for adequately high intensities in its June 23, 1996 first reading version of its de novo comprehensive plan, *i.e.,* a floor area ratio of 1.0 along the north side of N.W. 36th Street and in the portion of the City south of N.W. 36th Street.

It may be that the Department of Community Affairs will ultimately determine that Miami Springs must accommodate even higher densities and intensities in order to create more potential customers for the public transit system. However, it is certain that higher densities and intensities will generate more vehicular traffic. It may be that DCA will decide that such densities and intensities should be prohibited because they will exacerbate roadway level of service deficiencies. In fact, objection and recommendation 9 express an FDOT concern about the impact of proposed redevelopment areas on roadways. DCA may not know until it issues a final notice of intent to find the Miami Springs comprehensive plan "in compliance" just what it will expect the City to do in balancing the benefits of high densities and intensities in generating transit ridership against the roadway level of service problems that are created by high densities and intensities. The unpredictability of DCA's expectations with respect to this issue are heightened by the fact that DCA is very strongly committed to both promoting public transit and ensuring adequate roadway levels of service.

The City might be able to straddle the conflict between the transit benefits and the roadway liabilities of high densities and intensities by carefully considering each project on an ad hoc basis. The following policy language might be appropriate to enable such project by project consideration:

> Sites located south of N.W. 36th Street may have a floor area ratio up to 2.5 by special exception permit. Special exception permits for development projects with a floor area ratio greater than 1.0 shall be given only for specific projects which are determined by the City to substantially increase public transit use and decrease private automobile use. At a minimum, such projects shall only be approved if they conform to the following standards: 1) they shall not have a higher density or intensity than called for by the Dade County Future Land Use Element for Metropolitan Activity Centers; 2) they shall be located and site designed so that principal building entrances are within 750 feet walking distance of a transit stop or stops; 3) they shall have between principal building entrances and the transit stop or stops an attractively paved, landscaped, rain protected and shaded pedestrian pathway; 4)

they shall have no more than 75 percent of the parking otherwise required for the uses which they contain; 5) they shall contain a mix of uses that include at least three of the following: (a) *Commercial such as:* Hotels, Indoor Amusement, Movie Theaters, Restaurants, Neighborhood Shopping Centers, Community Shopping Centers, Regional Shopping Centers, Small Size Stores, Medium Size Stores, Department Stores, Convenience Stores, Beauty & Personnel Servicesa, Gym & Health Clubs; (b) *Residential such as:* 7-15 Units/Acre, 15-24 Units/Acre, Over 24 Units/Acre; (c) *Institutional such as:* High Intensity Recreation, Cultural Facilities, Day Care Centers, Parks, Intermediate Schools, Secondary Schools, College, Religious Facilities, Correctional Facilities, Social Service Agencies, Governmental Agencies.

The above language could be added to the language which the June 23, 1997 de novo version of the Plan employed as use and intensity regulations for the Airport, Marine and Highway Category of the Future Land Use Map.

Coordinate Entire Multi-Modal Transportation System with Land Uses (Objection and Recommendation 8)

Objection and recommendation 8 notes that Objective 1.2 of the June 23, 1997 first reading version of the Miami Springs de novo comprehensive plan calls for coordination between the traffic circulation system and land uses. This can be accomplished by limiting land uses and land use densities and intensities in such a way that they do not generate more traffic than the road system can accommodate. Such coordination is quite feasible in new suburban communities. For example, the Village of Wellington in Palm Beach County has low densities, wide arterial and collector rights of way, four and six lane cross sections and little through traffic. It has been projected that its arterials and collectors will operate at peak hour level of service D or better at or near build out. Older communities such as Miami Springs are less able to coordinate densities and intensities within tolerances that allow such high roadway levels of service. This is because Miami Springs is already largely built out, adjacent roadways such as N.W. 36 Avenue are constrained and there are nearby traffic generators that load adjacent roadways. The problematic roadways adjacent to Miami Springs are not under local jurisdiction. Therefore the City is obliged to adopt the same level of service standard for these roads as that adopted by the responsible jurisdiction. Since N.W. 36th Avenue and LeJeune Road are state roads, Miami Springs must adopt the state approved level of service standard for them. The state approved level of service standard for N.W. 36th Street and LeJeune Road are set forth in the Dade County Comprehensive Plan. These standards can be summarized as follows:

Where extraordinary transit service such as commuter rail or express bus service exists, parallel roadways within 1/2 mile shall operate at no greater than 150 percent of their capacity. This standard shall apply to N.W. 38th Street.

Where mass transit service having headways of 20 minutes or less is provided within 1/2 mile distance, roadways shall operate at no greater than 120 percent of their capacity. This standard shall apply to Okeechobee Road and Royal Poinciana Boulevard.

Where no public mass transit service exists, roadways shall operate at or above LOS E, in Special Transportation Areas 20 percent of non-State roads may operate below E. Special Transportation areas are mentioned in the Metropolitan Dade County Comprehensive Development Master Plan, but they are not defined. The scrivener has requested Dade County provide the operating definition intended by the Plan.

There are only 63 acres of vacant land in Miami Springs. Most of this is in the vicinity of N.W. 36th Street and LeJeune Road. If fully developed at the proposed floor area ratio of 1.0 set forth in the version of this plan adopted on first reading on June 23, 1997, then these 63 acres could add approximately 2,000 peak hour peak direction trips to N.W. 36th Street. If 2,000 trips are added to the 3,699 trips projected for 2015 in Table 2.5, then the level of service standard would not be met. However, the 3,699 projection includes assumptions about future development which could include all or a portion of the allowed 1.0 floor area ratio on the presently vacant sites.

Objection and recommendation 8 express displeasure with the fact that Objective 1.2 of the transportation element as adopted on first reading *only* calls for coordination between the traffic circulation system and land uses. Objection and recommendation 8 express the desire for coordination between land use, traffic *and* transit. Recommendation 8 calls for Objective 1.2 to be revised based on the findings of the analysis called for by recommendation 7. As noted above, higher densities would seem to be desirable in order to promote transit, but higher densities increase vehicular traffic even when transit use is relatively high.

In Miami Springs, it is difficult to predict whether high densities on vacant land would be preferred by DCA in order to promote transit or if lower densities would be preferred in order to reduce vehicular congestion. The previously suggested addition to the language which describes the permitted land uses and intensities in the Airport, Marine and Highway Category of the Future Land Use Map might be an appropriate way to straddle the horns of this dilemma.

Impact of Redevelopment on Multi-Modal Transportation System (Objection and Recommendation 9)

The Department of Transportation and the Department of Community Development would like to know the impact on transportation of redevelopment in the City's two "finding of necessity areas." Redevelopment at greater intensities than presently exist would increase traffic congestion (2015 traffic volumes are projected to be near capacity limits) and provide very few additional transit customers. There is very little possibility that transit ridership can be significantly increased without having a very negative impact on street congestion since transit ridership is such a low proportion of the modal split and since international trends indicate that more and more trips are made by private vehicles rather than by public transit. Fortunately, the base density which is permitted in the redevelopment areas by the June 23, 1997 first reading Future land Use Map is unlikely to result in measurably greater intensities of development; the permitted intensity is a floor area ratio of 1.0 and a recent redevelopment proposal envisioned a floor area ratio of 0.62 or less.[11] The policy language suggested in the discussion of objection and recommendation 7 and objection and recommendation 8 will help straddle the horns of the dilemma. Such policy language, coupled with a commitment to revise the transportation element following the lead of Dade County might be all that DCA requires in response to objection and recommendation 9.

Growth Trends, Travel Patterns, Interactions Between Land Uses and Transportation, Compatibility Between Future Land Use and Transportation Element (Objection and Recommendation 10)

Recommendation 10 notes that "When the City completes the analysis required pursuant to Item No. 7 above, the City will have sufficient data and analysis to determine the effects of growth on the transportation system and vice versa." Without this explicit instruction it would be difficult to determine what ingredient is present in the language of the DCA-approved Town of Surfside traffic circulation element (see Exhibit 2.4) that was not present in the traffic circulation element of the June 23, 1997 first reading version of the Miami Springs de novo comprehensive plan. It is possible that DCA is looking for intensities and densities which it thinks will support transit. As noted above, by way of objection and recommendation 7, DCA has stated that the City should,

> Analyze the FLUM densities, intensities and mixed use patterns against the thresholds required to support transit. The City should compare the existing FLUM designations within the transit corridor to a professionally correct source [PC] which has analyzed densities and intensities which support transit. One such document is the Dade County MPO document "Transit/Land Use Relationship Report." Where incompatible uses occur, an analysis should

[11] Proposed Airbus Training Facility to be located on N.W. 36th Street between Ragan and Sheridan.

It is possible that the policy language suggested in the context of the discussion of objection and recommendation 7 will be considered by DCA to be an appropriate response to recommendation 10.

How The City Will Maintain Its Adopted LOS for Roads and Transit (Objection and Recommendation 11)

The data and analysis submitted with the June 23, 1997 first reading version of the Miami Springs de novo comprehensive plan provided a rather explicit explanation of how the City will maintain adopted *roadway* levels of service and *transit* levels of service. However, the discussion with respect to transit emphasizes the dependence of the City on Dade County for transit service. There is no possibility that the City of Miami Springs will directly provide transit service. Also, there is no possibility that the City of Miami Springs will adopt a transit level of service different from that of Dade County. Furthermore, there is no reason to believe that the Florida Department of Community Affairs would approve a different adopted transit level of service for Miami Springs.

Insofar as is known, the Metro-Dade Transit Authority is not contemplating a reduction in the level of service now provided to Miami Springs. There is even less reason to suppose that the level of transit service provided to Miami Springs will be reduced below the standard adopted by Dade County. If Miami Springs adopts the current Dade County transit level of service standard, then the City will most assuredly meet those standards, which, according to Dade County, were purposely set low so that they would be easy to achieve throughout the developed portion of the county.

Although the Miami-Dade Transit Authority has indicated no intention of reducing transit service to Miami Springs, it is not out of the question that service could be reduced at some point in the future since the routes which serve the City operate deeper in the red than the average for the Dade County system, as noted in the discussion of "Public Transit Ridership by Route," which appears above under the heading "'Holistic' Format and Delayed Adoption (Objection and Recommendation 1)." Indeed, one of the routes which serves Miami Springs, Route 36, is among 18 routes characterized by Metro-Date Transit's 1996 *Transit Development Plan* as operating below MDTA's service standard for net cost per passenger, which is 2.7 times in excess of the system average. In other words, MDTA, which is loosing money at such a rapid clip that it requires subsidies in the amount of two thirds its total operating costs, considers it acceptable to maintain routes which cost 2.7 times as much per passenger to maintain as the average for all system routes. At this time, MDTA is expanding service elsewhere with new fixed rail facilities. It is to be hoped that such an expansion will not result in the kind of financial problems that occurred in the Boston transit system. According to Jose A. Gomez-Ibanez, Derek C. Bok Professor of Public Policy and Urban Planning at Harvard's Graduate School of Design and the John F. Kennedy School of Government,

> If current trends continue, the growing deficit eventually will force Boston to rethink its commitment to maintaining or increasing transit and commuter rail ridership, and to cut back services and patronage instead. Indeed, under these circumstances, allowing the MBTA to cut back its services and to lose ridership might be sensible, since the costs of retaining the current ridership will have grown to the point where they greatly exceed the social benefits. The MBTA already carries only a very small percentage of regional travel, for example, so its contribution to solving regional problems, such as air pollution, is relatively modest. Transit and commuter rail accounted for only 11 percent of the region's work trips in 1990 (table 1), and probably less than 5 percent of trips of all types (note: commuting trips make up about 30 percent of all person trips in most metropolitan areas, and transit's share of nonwork trips is typically very small). Furthermore, the MBTA's share of the travel market will continue to decline even if the MBTA holds on to its current ridership, since auto use is growing steadily. Soon even a major decline in MBTA ridership will cause only a trivial increase in regional pollution emissions. As the cost of retaining riders continues to increase,

is growing steadily. Soon even a major decline in MBTA ridership will cause only a trivial increase in regional pollution emissions. As the cost of retaining riders continues to increase, moreover, alternative methods of reducing regional emissions will become much more cost effective than promoting MBTA ridership will be.

The MBTA makes a major contribution to certain localized problems, most notably controlling traffic congestion on the approaches to the metropolitan core; it is in these markets that a decline in MBTA ridership might hurt the most. Ironically, however, these are probably among the markets where retaining transit ridership will require relatively smaller subsidies, because the high congestion and high downtown parking charges make the auto a less attractive alternative for many travelers. The suburban rail extensions have added the most to the deficit and arguably have contributed the least to reducing congestion. Focusing the MBTA's resources on the core of the system, where it stands the best chance of holding ridership at a reasonable cost and where it provides the most social benefits, would be far more sensible than would further extensions.

In sum, as much as Boston tries to avoid it, the region faces a basic decision: either it will have to learn to make tough choices about controlling MBTA unit costs and being more selective in MBTA service and fare offerings, or it will soon be forced to abandon its goal of trying to maintain the region's transit ridership. [12]

Additional financial problems might arise from the inefficiencies associated with the political component in transit system management. Professor Gomez-Ibanez has commented as follows on this feature of public transit in Boston,

The problem, of course, is that the most promising policies for controlling the deficit while maintaining ridership are also among the most politically unpalatable. The simple explanation usually offered is that tolling autos, controlling transit labor costs, cutting less productive services, or railing fares, even selectively, imposes highly visible costs that are focused on often well-organized and easily mobilized groups. The gains in reduced deficits are, by contrast, often far less visible or concentrated. This is especially true because in most metropolitan areas, as in Boston, the burden of the transit deficit is now shared by the state and numerous local jurisdictions; no one local government pays a very large share (except the city of Boston), and the jurisdiction paying the largest share (the state) also has a large budget and diverse interests.

This dynamic is particularly obvious with service cuts or fare increases. When the MBTA proposed recently to cut service on a few of its least used bus lines, for example, it soon faced loud objections from local officials--every line, it seemed, served some school, nursing home, hospital, or other essential institution along its route. Each public official lobbies to protect service in his or her district, even while deploring the growth in the general transit deficit.

It helps the opposition in these matters, moreover, that local groups can often argue that they are advancing broader or more widely shared public values as well as parochial interests. Improved mass transit offers the prospect of benefits for the region as a whole in the form of reduced traffic congestion, improved air quality, and reduced dependence on foreign energy sources.

It is difficult to imagine changes in the present system of MBTA governance or finance that would significantly improve incentives to pursue policies that maintain ridership without greatly increasing the deficit. The most obvious possibilities all appear also to have obvious flaws.

One idea is to focus the burden of the deficit more tightly on the jurisdictions or communities that benefit from transit service, so that public officials would make more balanced choices.

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[12] Gomez-Ibanez, Jose A. "Big-City Transit Ridership, Deficits, and Politics: Avoiding Reality in Boston," *APA Journal*, Volume 62, Number 1, Winter 1996, page 48.

> During the 1970s, for example, a Massachusetts state senator promoted a scheme under which the MBTA would be divided into eight subdistricts and all routes would be classified as either local or intercommunity services. Each subdistrict would be responsible for deciding how much local service it wanted, and for paying the bill. The problem, of course, is that very few routes have an exclusively local character in a metropolitan area fragmented into numerous cities and towns, as Boston is. Deciding who benefits from (and thus who should pay for) the intercommunity routes is a job worthy of King Solomon. [13]

An analysis of the operating cost problems that can arise in public transit systems is set forth in a paper from the Wendell Cox Consultancy. This paper is reproduced as Exhibit 2.5. Should the MDTA come under cost pressure from the factors described in Exhibit 2.5, it is possible that the transit level of service available to Miami Springs would have to be curbed. It is not imaginable how the City of Miami Springs could, with its own devices, provide the resources necessary to overcome such problems. Indeed, the whole point of the Cox paper is to show that some subsidies that public resources are likely to provide can be counter productive.

As noted in the discussion pertaining to objection and recommendation 7, DCA may be satisfied if the City incorporates in the future land use map use, density and intensity provisions which will "support transit." Language which could straddle the desire for transit supportive land uses and the desire to keep vehicular traffic at acceptable levels has been suggested above. However, it is possible that even the changes that might arise from such development would support transit only in a trivial way. The problem of pursuing transit supportive land use policies has been analyzed by Professors Marlon Boarnet and Randall Crane as follows,

> Despite the popularity of blaming coalitions of oil companies and automobile manufacturers for the demise of the Pacific Electric Railway (and likewise the other rail lines in Los Angeles), Adler (1991) shows that their disappearance is best credited to the workings of political coalitions that favored freeways over rail. For many suburban municipalities, the advantage of a highway network was that it supported economic development within their communities. Rail, with its hub-and-spoke orientation, was perceived to favor the economic development of downtown Los Angeles. Although concentrating business and commercial activity in the central core appealed to the downtown business community, it was anathema to the developing economic centers in places such as Santa Monica, the San Fernando Valley, the San Gabriel Valley, and Long Beach.
>
> In the end, highways drew support from a broad coalition of suburban municipalities and downtown business interests (Adler 1991). Most major political actors viewed freeways as supporting economic development in their communities, while rail was perceived as supporting growth only in the downtown. It was almost as if local governments voted in their own economic development interests, and more municipalities perceived freeways as benefiting their local economies. The politics of local economic development helped shape a transportation system, and in the process led Los Angeles from rail to freeways. Given this history, and the fact that political battles over transportation often are influenced by the spatial pattern of economic benefits, it is reasonable to expect that the current generation of rail transit systems in Los Angeles and other regions are subject to the same political pressures. [14]

Internal Consistency of the Plan (Objection and Recommendation 12)

Recommendation 12 calls for the City to "Explain in detail how the policies and programs of the transportation element support and further objectives and policies of other comprehensive plan components." The policies and programs of the transportation element are intended to ensure

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[13] Gomez-Ibanez, Jose A. "Big-City Transit Ridership, Deficits, and Politics: Avoiding Reality in Boston," *APA Journal*, Volume 62, Number 1, Winter 1996, page 47.

[14] Boarnte, Marlon and Crane, Randall. "L.A. Story: A Reality Check for Transit-Based Housing," *APA Journal*, Volume 63, Number 2, Spring 1997, page 189.

that people can get about in cars (the people's preferred mode of travel), in public conveyances, on bicycles and on foot. As such they support all the other elements as follows:

> Land Use Element: Allowing people to get about makes it possible for people to use the various land uses *of all types* that are set forth in the future land use map.
>
> Housing Element: Allowing people to get about makes it possible for people to use the various *residential* land uses called for in the Housing Element.
>
> Infrastructure Element: The rights-of-way provided for in the Transportation Element also accommodate potable water systems, sanitary sewer systems, drainage systems and other infrastructure systems. Allowing people to get about makes it possible for people to operate and maintain the various infrastructure facilities called for in the Infrastructure Element.
>
> Conservation Element: Allowing people to get about makes it possible for people to monitor and manage natural resources.
>
> Recreation Element: Allowing people to get about makes it possible for people to use the recreation resources called for in the Recreation Element.
>
> Capital Improvements Element: The Capital Improvements Element supports the Transportation Element rather than the other way around.

Recommendation 12 also states that "The City's analysis should examine internal consistency such as, but not limited to, whether the FLUM supports the transportation system, whether particular capital improvements are needed, and whether the transportation system supports infill development." With respect to the vehicular transportation system, it is the transportation system which supports the future land use map (FLUM), rather than the other way around. Indeed, as noted above, the transportation system called for in the transportation element does support the future land use map by making it possible for people to get from each land use to every other land use. The transportation system supports infill development in the same way that it supports existing development and new development, namely by making it possible for people to get about. Needed capital improvements are set forth in Table 8.1, which is incorporated herein by reference. Needed capital projects are also set forth in Table 2.6 which is also incorporated herein by reference.

Land Uses and Transportation Management Programs Necessary to Promote and Support Public Transportation Systems in Designated Public Transportation Corridors (Objection and Recommendation 13)

Objection and recommendation 13 are summarized by the above caption. Recommendation 13 states, "If the City can adequately respond to item No. 7 above, the land use component should be addressed." Accordingly, the narrative set forth above in response to objection and recommendation 7 is incorporated herein by reference as a response to the land use portion of objection and recommendation 13.

Transportation demand and transportation system management programs and strategies are defined in Rule 9J-5 as follows:

> "Transportation demand management" means strategies and techniques that can be used to increase the efficiency of the transportation system. Demand management focuses on ways of influencing the amount and demand for transportation by encouraging alternatives to the single-occupant automobile and by altering local peak hour travel demand. These strategies and techniques may, among others, include: ridersharing programs, flexible work hours, telecommuting, shuttle services, and parking management.

management strategies, and other actions that increase the operating efficiency of the existing system.

The August 23, 1996 "Objections, Recommendations and Comments Report" prepared by DCA on the Dade County comprehensive plan noted on page 11 that the Dade County plan also failed to include "an analysis which identifies land uses and transportation management programs necessary to promote public transportation." The basis for this objection is cited as Rule 9J-5.019(3)(j). DCA's October 10, 1996 "Statement of Intent to Find [the Dade County] Comprehensive Plan Amendment not in Compliance" does not object to the Dade County comprehensive plan on the basis of Rule 9J-5.019(3)(j). Therefore, the emendations to the data and analysis of the Dade County comprehensive plan made between August 23, 1996 and October 10, 1996 may have adequately addressed the requirements of Rule 9J-5.019(3)(j). The emendations appear in a document entitled *Revised Recommendations, November 1995 Applications to Amend the Comprehensive Development Master Plan* dated September 3, 1996 and a document entitled *Response to Objections Raised by the Florida Department of Community Affairs* dated October 2, 1996. The relevant general comments of these documents are incorporated herein by reference. The most relevant specific comments appear in the October 2 document beginning at page C-61. They are quoted herein as follows,

> In addition to the land use/growth management strategies highlighted in the Land Use Element of the CDMP, the County is pursuing the establishment of transportation system and transportation demand management strategies that will also support the use of transit systems and alternative transportation modes. The final draft report of the Dade County Mobility Management Process, dated October 1995 and prepared by the Dade County MPO, identifies the following transit supportive strategies: development of trip reduction ordinance; shuttle and subscription bus services; employer subsidized transit use; employee transportation allowance; parking management; parking pricing; formation of transportation management associations; development of high occupancy vehicle (HOV) lanes; bus traffic signal preemption; roadway improvements/amenities for transit; development of park and ride facilities; development of exclusive bus lanes; development of fixed guideway transit; development of express and feeder bus system; improvements to bus routes; modifications in the transit fare structure; promotion of transit passes; auto restricted zones; and road pricing.
>
> While most of these strategies are currently being evaluated by the Dade County MPO, some are already being implemented. The following is a partial list of those under implementation: transportation management associations (TMAs), HOV lanes, park and ride facilities, fixed guideway transit, express and feeder bus system, improvement to bus routes, and promotion of transit passes.
>
> Dade County has taken a multimodal approach to the development of nonmotorized transportation, preferring to integrate bicycle and pedestrian access into the planning and design of general transportation facilities, rather than develop stand-along bicycle or pedestrian plans that may go unfunded. Examples include the East-West Multimodal Corridor Study (Recommendations Report, 1996) and Miami Intermodal Center Study (Recommendations Report, 1996). These studies recommended the development of a 16-mile transit corridor extending from Florida International University on the west, through a new Miami Intermodal Center (MIC) immediately east of the airport, and into the Port, with stations located at major cruise line terminals. The line would continue on to the northeast, into the City of Miami Beach. Both the East-West and MIC studies included consideration of nonmotorized transport access.
>
> A 1993 report by the Dade County MPO, the Railroads Right-of-Way Assessment Study, cataloged existing railway corridors and reviewed public sector initiatives to preserve them, as well as future non-rail uses for those lines unlikely to remain in continued railroad use. One criteria used to evaluate these rail lines was their potential use for as non-motorized trail easements.

One criteria used to evaluate these rail lines was their potential use for as non-motorized trail easements.

As one task of a larger program to encourage the formation and improve the effectiveness of existing Transportation Management Associations (TMAs) within the county, detailed bicycle and pedestrian studies were conducted within the Civic Center Area (a one square-mile hospital, governmental and judicial district about four miles northeast of downtown Miami, completed in 1993) and in the historic South Beach area of the City of Miami Beach (1994). The focus of these studies was to inventory bicycle and pedestrian amenities and identify low cost measures to improve nonmotorized travel within these areas.

Although the County has adopted an integrated approach to nonmotorized transportation implementation, overall coordination is required. The system of trail facilities has been developed in the Metro-Dade Bicycle Facilities Plan (1994). The recommended network calls for the development of ten trails totaling 194 miles in length. The proposed system would link two national parks, tourist attractions, regional parks, and numerous schools and work centers, making it the State's largest bikeway network. Funding for the first phase of the project has been included in the MPO's 1996 and 1997 Transportation Improvement Programs. A North Dade Greenways study has also been authorized by the MPO and will be completed in 1997. A primary recommendation of the Bicycle Facilities Plan, that 1.5 percent of the County's eligible surface transportation capital funds be reserved for alternative transportation projects and transportation enhancement was incorporated into the MPO's 2015 Transportation Plan Update.

Miami Springs will be able to coordinate with Dade County in fulfilling at least some transportation demand management and transportation system management strategies, including those referenced in the above quote and/or others. In addition, this document takes note of "demand pricing" of highways as a long range strategy for coordinating land use with the transportation system. The concept of demand pricing is being studied and implemented in other jurisdictions. It is described in Exhibit 2.6.

Objections and Recommendations 14 through 20

Objections and recommendations 14 through 20 call for the modification of specific objectives and policies of the transportation element. Required modifications appear in the goals, objectives and policies components of the comprehensive plan.

Evacuation of Coastal Populations (Objection and Recommendation 6)

Figure 7 of the Future Transportation Map series of the *November 1995-96 Cycle Amendment to the Dade County Comprehensive Development Master Plan* (DCA No. 96-2 ER) is entitled and depicts "Designated Evacuation Routes–2015." This Figure 7 is incorporated herein by reference. Major routes and linkage routes are shown. None of these routes falls within or lies adjacent to the City of Miami Springs.

The document entitled *Adopted Components, Comprehensive Redevelopment Master Plan, Metro-Dade County, Florida, 1997* includes the following statement,

> Following Hurricane Andrew, State law redefined the "Coastal High Hazard Area" (CHHA) from the FEMA "V" Zone to the Category 1 Hurricane evacuation zone as established in the regional hurricane evacuation plan. In Dade County the CHHA consists of the barrier islands. The State also eliminated the "Coastal Hazard Area" and established the "Hurricane Vulnerability Zone" (HVZ), defined as areas delineated as Category 3 Hurricane Evacuation Areas by the regional or local evacuation plan. In addition, the Strategic Regional Policy Plan for South Florida also establishes policies addressing hurricane Category 4 and 5

evacuation areas. These three areas – the CHHA, HVZ, and Category 4 and 5 evacuation areas -- as delineated by the Metro-Dade County Office of Emergency Management (OEM) are presented for information purposes on Figure VII-1. Storm risk data and these evacuation boundaries are continually reevaluated by OEM and may be changed by OEM whenever deemed appropriate for emergency management purposes.

The above referenced Figure VII-1 is incorporated herein by reference. It shows that Miami Springs, except the portion lying east of LeJeune Road, lies outside the category 1 hurricane evacuation zone, outside the category 2 hurricane vulnerability zone, and outside the hurricane category 4 and 5 zones to which special South Florida Regional Planning Council policies apply. The area of Miami Springs lying east of the LeJeune Road falls within the hurricane category 4 and 5 zones. There are no residential land uses designated on the Future Land Use Map for the portion of Miami Springs east of LeJeune Road. Special South Florida Regional Planning Council policies that apply to category 4 and category 5 evacuation zones include Policy 7.1.1, c, which reads as follows:

All levels of government should review alterations in ground elevations in the Category 5 Hurricane Evacuation Area and develop policies to guide future development densities based on performance standards and acceptable risks. Local governments should consider the long-term economic and environmental impacts of increasing allowable development densities in the Category 5 Hurricane Evacuation Area. Local governments should ensure that new development and redevelopment in the Category 5 Hurricane Evacuation Area complies with the National Flood Insurance Program, the South Florida Building Code, and hurricane shelter policies promoted by the SRPP.

Table 2.1
Existing Peak Hour Traffic Volumes and Levels of Service for Le Jeune Road, Okeechobee Road and N.W. 36th Street
from Metropolitan Dade County Concurrency Information Center

Roadway	Location	Count Station Number	Number of Lanes	Max LOS	PHP	START	DO Trips	Avail Trips	LOS Stand	LOS	Count Date	Estimated Peak Hour-Peak Direction Volume / LOS
Le Jeune Road (SR 953)	S of Miami River Canal	0558	6	6010	3308	2702	0	2702	E + 20	C	4/95	3,426 / C
Okeechobee Road (SR 25)	SE of NW 67th Avenue	5252	6	5190	4103	1087	0	1087	E	C	12/94	2,958 / C
Okeechobee Road (SR 25)	SE of NW 54th Street	200	4	3240	3894	-654	14	-668	E	F	12/94	1,847 / F
NW 36th (SR 948)	W of NW 42 Avenue	0102	6	8750	4271	4479	0	4479	E + 50	D	4/95	4,987 / D

Source: Metropolitan Dade County Concurrency Information Center for all except last column. This source is used for the indicated roads because it provides the most timely published counts and because it is commonly relied upon by Dade County and Dade County municipalities for concurrency management. The location of the count stations reported on this table are shown on Figure 2.1. The six lanes indicated for Okeechobee Road (SR 25) southeast of Northwest 67th Avenue (Ludlam Road) are not consistent with the five lanes divided indicated Figure 2.1. The five lanes divided are made up of three lanes northwest bound (which is the peak direction of flow at the penk hour) and two lanes southeast bound.

Explanation of Column Headings: "Number of Lanes" indicates the number of lanes reported by the Metropolitan Dade County Concurrency Information Center. "Max LOS" means "maximum level of service." The numbers in this column are the number of trips permitted by the interaction of the adopted los and the existing characteristics of the roadway (number of lanes, signals per mile, etc.) as determined by the ART TAB program. "PHP" means "peak hour period" which is determined by summing the trips during the two consecutive highest hours and dividing by two. The numbers in the column are the number of trips which result from this average. "START" means the number of trips that are available at the start of a concurrency analysis. The numbers in the column are obtained by subtracting the number of trips in the "PHP" column from the number of trips in the "Max LOS" column. "DO Trips" means "development order trips." The numbers in the column are the number of trips that will be loaded onto the road network at the designated count station by approved but not yet constructed development orders. "Avail Trips" means "available trips." The numbers in this column are given by, "Max LOS - (PHP + DO Trips)." "LOS" means "level of service." The letter in the column indicates the 'level of service" at the time of the traffic count indicated by the PHP column. The last column contains an estimate of Peak Hour-Peak Direction volume based on 57 percent of "Max LOS." This factor wns chosen by Robert K. Swarthout, Incorporated based on general experience. The Peak Hour-Peak Direction LOS reported in the last column is estimated based on the actual LOS reported by Dade County in the "LOS" column. Note that the "Max LOS" given by the Dade County Concurrency Management Center is higher than the LOS found in the FDOT Level of Service Manual for similar roadways. FDOT Level of Service Manual LOS's are used elsewhere in this document.

Table 2.2
Existing Peak Hour/Peak Direction Traffic Volumes and Levels of Service for Okeechobee Road
based on Keith & Schnars Counts

Roadway	Location	Nearest Count Station	Total Number of Lanes	NWB Number of Lanes	SEB Number of Lanes	Peak Hour Peak Direction Maximum Service Volume at LOS "D"	Peak Hour Peak Direction Actual Volume	Keith & Schnars Determined LOS	Count Date
NWB Okeechobee Road (SR 25)	SE of NW 67th Avenue Ludlam Road	5252	5D	3	0	2,330	2,114	D	8/23/94
SEB Okeechobee Road (SR 25)	SE of NW 67th Avenue Ludlam Road	5252	5D	0	2	1,520	1,530	E	8/23/94
Okeechobee Road (SR 25)	SE of NW 54th Street Curtiss Parkway	200	4UD	2	2	1,216	2,202	F	8/23/94

Source: "Peak Hour/Peak Direction Actual Volume" from Okeechobee Road (U.S. 27/S.R. 25) Preliminary Engineering Report, April 1995, prepared for the Florida Department of Transportation by Keith & Schnars, P.A. See Keith & Schnars Tables 6-3A and 6-3B. "5D" indicates a divided facility with two (2) lanes southeast bound (SEB) and three (3) lanes northwest bound (NWB).

Explanation of Column Headings: The column headed "Nearest Count Station" indicates count stations for which the Dade County Office of Concurrency Management reports data. Stations shown in this Table are all Florida Department of Transportation (FDOT) stations. "NWB" means "northwest bound." "SEB" means "southeast bound."

Table 2.3
Existing Peak Hour/Peak Direction Traffic Volumes and Levels of Service for N.W. 36th, Le Jeune Road and Curtiss Parkway
based on Post, Buckley, Schuh & Jernigan, Inc. Counts

Roadway	Location	Nearest Count Station Number	Figure 2.1 Count Station Letter	Total Number of Lanes	Peak Hour Peak Direction Maximum Service Volume at LOS "D"	Peak Hour Peak Direction Actual Volume	Estimated LOS	Count Date
NW 36th (SR 948)	E of NW 57th Avenue	430	na	6D	2,330	2,320	D	3/2/95
NW 36th (SR 948)	W of NW 42nd Avenue	102	na	6D	2,330	2,291	E	NA
Le Jeune Road (SR 953)	S of Miami River Canal	0558	na	4D	1,520	1,809	F	NA
Curtiss Parkway	N of NW 36th Street	na	G	4D	1,520	1,071	D	3/2/95

Source: "Peak Hour/Peak Direction Actual Volume" from Draft N.W. 36 Street/N.W. 41st Street-SR 112 Extension Corridor Concept Study Report, June 8, 1995, prepared for the Dade County Metropolitan Planning Organization and the Florida Department of Transportation by Post, Buckley, Schuh & Jernigan, Inc. See Post, Buckley, Schuh & Jernigan, Inc. Appendix A. "Peak Hour/Peak Direction 'D' Capacity" and "Estimated LOS" as given for Group C (2.5 to 4.5 signalized intersections per mile) in Table 3-1 of the Florida Department of Transportation Level of Service Manual.

Explanation of Column Headings: The column headed "Nearest Count Station" indicates count stations for which the Dade County Office of Concurrency Management reports data. Those shown in this Table are all Florida Department of Transportation (FDOT) stations.

Table 2.4
Existing Traffic Volumes and Levels of Service Near Miami Springs Circle
based on Keith & Schnars Counts

Roadway	Location	Figure 2.1 Count Station Letter	Number of Lanes	ADT Counts	Peak Hour at 9 % ADT	Peak Direction at 57 % Peak Hour	Peak Hour Peak Direction Maximum Service Volume at LOS "D"	Estimated LOS	Count Date
Curtiss Parkway	NE of Miami Springs Circle	A	4D	20,130	1,811	576	1,520	C	10/28/92
South Royal Poinciana Blvd	SE of Miami Springs Circle	B	2	25,971	2,337	1,332	690	F	6/9/92
Palmetto Drive	S of Miami Springs Circle	C	2	1,917	173	98	690	C	6/9/92
Curtiss Parkway	SW of Miami Springs Circle	D	4D	19,448	1,750	998	1,520	C	10/28/92
Westward Drive	W of Miami Springs Circle	E	4D	9,732	894	509	1,520	C	6/9/92
North Royal Poinciana Blvd	NW of Miami Springs Circle	F	2	17,864	1,608	916	690	F	6/9/92

Source: "ADT Counts" from Okeechobee Road (U.S. 27/S.R. 25) Preliminary Engineering Report, April 1995, prepared for the Florida Department of Transportation by Keith & Schnars, P.A. Nine percent and 57 percent peak hour and peak direction factors selected by Robert K. Swarthout, Incorporated based on general experience. "Peak Hour/Peak Direction 'D' Capacity" and "Estimated LOS" as given for Group C (2.5 to 4.5 signalized intersections per mile) in Table 3-1 of the Florida Department of Transportation Level of Service Manual. Explanation of Column Headings: "ADT" means "average daily traffic."

Table 2.5
Projected 2015 Traffic Volumes and Levels of Service

Roadway	Location	Nearest Count Station Letter (Fig 2.1)	Nearest Count Station Number (Fig 2.1)	Number of Lanes	Projected Peak Direction ADT	Peak Hour Peak Direction at 9 % of ADT	Peak Hour Peak Direction Maximum Service Volume at LOS "E"	Proposed Trans-portation Element Policy 1.1.1 "Capacity"	Policy 1.1.1 "Capacity" Met YES/NO
NW 36th (SR 948)	E of NW 57th Avenue		430	6D	41,100	3,699	2,520	3,780	YES
NW 36th (SR 948)	W of NW 42nd Avenue		102	6D	40.900	3,681	2,520	3,780	YES
Le Jeune Road (SR 953)	S of Miami River Canal		0558	4D	23,800	2,142	1,670	2,004	NO
Okeechobee Rd (SR 25)	SE of NW 67th Avenue		5252	6D	31,200	2,808	2,520	3,024	NO
Okeechobee Rd (SR 25)	SE of NW 54th Avenue		200	6D	38,800	3,492	2,520	3,024	NO
Curtiss Parkway	NE of Miami Springs Circle	A		4D	25,700	2,313	1,670	1,670	NO
Royal Poinciana Blvd S	SE of Miami Springs Circle	B		2	13,700	1,233	780	936	NO
Palmetto Drive	S of Miami Springs Circle	C		2	na	na	780	780	na
Curtiss Parkway	SW of Miami Springs Circle	D		4D	19,000	1,710	1,670	1,670	NO
Westward Drive	W of Miami Springs Circle	E		4D	7,600	684	1,670	1,670	YES
Royal Poinciana Blvd N	NW of Miami Springs Circle	F		2	11,800	1,062	780	936	NO

Source: The "Projected Number of Lanes" is the same as the current number of lanes except for Okeechobee Road (which is shown increased to 6 lanes) because it is based on the September 18, 1995 Draft of the Cost Feasible Plan for the Year 2015. "Projected Peak Direction ADT" from November 28, 1995 Draft Year 2015 Transportation Plan prepared by the Metropolitan Planning Organization. The Year 2015 Plan associates projected volumes with links. For this table, the link volumes have been assigned to the nearest count station for the convenience of comparison.

The nine percent peak hour factor selected by Robert K. Swarthout, Incorporated based on general experience. "Peak Hour Peak Direction Maximum Service Volume at LOS 'E'" figures as given for Group C (2.5 to 4.5 signalized intersections per mile) in Table 3-1 of the Florida Department of Transportation 1995 Level of Service Manual.

Explanation of Column Headings: "ADT" means "average daily traffic." The "D" in the "Number of Lanes" column signifies a divided roadway. "Peak Hour, Peak Direction Maximum Service Volume at LOS "E" is included for informational purposes only; LOS "E" is not the current nor the proposed LOS standard. "Transportation Element Policy 1.1.1 'Capacity'" means the amount of traffic that would be utilized for concurrency management purposes if Policy 1.1.1 is adopted in the form proposed in the July, 1996 draft of this plan. This is not a capacity measurement in the sense that such is normally understood, which is why the word "capacity" is placed in quotation marks in the heading.

Table 2.6
Projects Planned by the FDOT Adopted Work Program and MPO Long Range Transportation Plan and Transportation Improvement Program dated 04/11/95

04/11/95 — FLORIDA DEPARTMENT OF TRANSPORTATION — WPAPJ93 (II)

STATE TRANSPORTATION IMPROVEMENT PROGRAM

FOR STATE FISCAL YEARS: 95/96 THRU 99/00

TENTATIVE PLAN

HIGHWAYS

COUNTY: DADE

ITEM NO / ENV-SUR CODES	COUNTY / TYPE OF WORK / RDWY ID STROADNO PROJ LGTH / FEDERAL AID NUMBER	LOCAL NAME / LIMITS FROM / LIMITS TO / BEG PT / END PT / EX IM AD / JOB NUMBER / FUND / PHASE	95/96	96/97	97/98	98/99	99/00	
6113862 F S G D P	DADE P. D. & E. STUDY 87003000	SR 112/AIRPORT EXPY. SR 112 4.882 MI - - - ( ) - - - ( )	SR-953/LEJEUNE RD N.W. 2ND AVE. .150 4.132 6 8 2 *****_**** DIH PE *****_**** DDR ROW	100,000	100,000	150,000 8,200,006	100,000	2,683,217	PAGE 5
6113935 F G	DADE FEDERAL AID RESURFACE/REPAVE 87090000	OKEECHOBEE RD/NW36ST SR 25 8.438 MI - - - ( )	SR 821/ H.E.F.T. SR 826 5.166 13.604 4 4 0 *****_**** XA CST			2,755,983			PAGE 6
6114016 F W S G	DADE MAJOR FEDERAL (EIS) 87090000	SR 25/OKEECHOBEE RD. SR 25 4.818 MI - - - ( ) - - - ( )	SR 826/PALMETTO EXPY SR 112/AIRPORT EXPY 10.357 15.175 4 6 2 *****_**** DIH PE *****_**** DS PE	200,000 3,500,000					PAGE 8
6114275 F S G D	DADE FEDERAL AID RESURFACE/REPAVE 87090000	N.W. 36TH ST./SR25 SR 25 1.050 MI -ACXU-6206- (8)	N.W. 17TH AVE. N.W. 7TH AVE. 17.462 18.512 4 4 0 87090-3507 ACXU CST	880,650					PAGE 17
6123258 F G	DADE BIKE PATH ********	VA GRDNS/MIAMI SPRNG BIKEWAY SYSTEM (LUDLAM CANAL PATH) .000 - - - ( ) - - - ( ) - - - ( ) - - - ( )	.000 .000 *****_**** LFF CST *****_**** SE CST *****_**** LFF CST *****_**** SE CST	9,295 83,656 1,859 16,731					PAGE 20

Table 2.6 (Continued)
Projects Planned by the FDOT Adopted Work Program and
MPO Long Range Transportation Plan and Transportation Improvement Program da d 04/11/95

04/11/95

FLORIDA DEPARTMENT OF TRANSPORTATION
STATE TRANSPORTATION IMPROVEMENT PROGRA
FOR STATE FISCAL YEARS: 95/96 THRU 99/00

WPAPJ93 (II)

TENTATIVE PLAN

HIGHWAYS

COUNTY: DADE

ITEM NO / ENV-SUR CODES	COUNTY / TYPE OF WORK / RDWY ID STROADNO PROJ LGTH / FEDERAL AID NUMBER	LOCAL NAME / LIMITS FROM / LIMITS TO / BEG PT END PT EX IM AD / JOB NUMBER	FUND / PHASE	95/96	96/97	97/98	98/99	99/00	
6123276 F G D	DADE LANDSCAPING ******** .000	MIAMI RIVER AND LUDLAM CANAL (MIAMI SPRINGS) .000 .000							PAGE 21
	- - - ( )	*****-****	LFF MSC			10,000			
	- - - ( )	*****-****	SE MSC			90,000			
6830294	DADE FIXED GUIDEWAY IMPROVEMENTS ******** .000	MIAMI INTERMODAL CTR MIAMI INTERNAT'L A/P CONNECTOR .000 .000							PAGE 48
	- - - ( )	*****-****	DS MSC	6,600,000					
6830294	DADE FIXED GUIDEWAY IMPROVEMENTS ******** .000	MIAMI INTERMODAL CTR MIAMI INTERNAT'L A/P CONNECTOR .000 .000							PAGE 49
	- - - ( )	*****-****	LF MSC	6,600,000					
	- - - ( )	*****-****	DS MSC		1	00,000			
	- - - ( )	*****-****	LF MSC		1	00,000			

Exhibit 2.1
Department of Community Affairs Transportation Objections and Recommendations

1. **Objection:** This element is organized such that the City is combining the traffic circulation, mass transit, and other elements that were formerly part of the plan. The element is not presented in a holistic manner which examines a complete transportation system, but rather is listed by sub-components. In addition, the element references Rule 9J-5.007, .008, and .009 which have been repealed from Rule 9J-5, F.A.C. and were replaced by Rule 9J-5.019, F.A.C.

   Recommendation: As the Transportation Element does not meet the requirements of Rule 9J-5.019, F.A.C., the City should defer adoption of the Transportation Element until coordination occurs with the Dade County MPO and Dade County. Alternatively, the City may adopt interim policies with specific commitments to complete the required analysis as outlined below by a date certain. [Rule 9J-5.019, F.A.C.]

2. **Objection:** The element does not contain an analysis of the transportation system level of service and system needs based upon existing modal split and vehicle occupancy rates; public transit facilities, including ridership by route and peak hour capacities; and population characteristics. In addition, Policy 1.1.1, which contains level of service standards for roadways, does not contain an LOS standard for transit facilities. [Rule 9J-5.019 (3) (a), F.A.C.]

   Recommendation: Include an analysis of the transportation system level of service and system needs based upon existing modal split which identifies vehicle and mass transit occupancy rates; public transit facilities, including ridership by route and peak hour capacities; and population characteristics. The analysis must show how the transportation system is functioning and identify needs which will correct existing deficiencies with the intermodal facilities. The data should be found at the Metro-Dade Transit Authority (MDTA), the Metro-Dade MPO, or the Dade County Planning Department. Upon completion of the analysis, the City should be able to determine the transit LOS standard and must revise Policy 1.1.1 to include an LOS standard for transit facilities.

3. **Objection:** FDOT raised an objection that Tables 2.1 and 2.2, which provides LOS data for Okeechobee Road are not consistent. [Rule 9J-5.005 (5) (a), F.A.C.]

   Recommendation: FDOT recommends that the vehicle counts and LOS analysis be internally consistent.

4. **Objection:** FDOT raised an objection that the projected 2015 Peak Hour Peak Direction values are based upon an adjustment factor of nine percent. The footnotes for the 2015 estimates do not provide any explanation as to why nine percent of the Average Daily Trips (ADT) was utilized. [Rule 9J-5.005 (2) (a), F.A.C.]

   Recommendation: FDOT recommends that documentation must be provided to substantiate the assertion that Peak Hour Peak Direction is nine percent of ADT.

5. **Objection:** As the City has not adequately analyzed Rule 9J-5.019 (3) (a), F.A.C., the City has not analyzed the availability of the transportation facilities and services to serve the existing land uses. [Rule 9J-5.019 (c) (b), F.A.C.]

   Recommendation: Include an analysis of the availability of the transportation facilities and services to serve the existing land uses. This analysis must demonstrate whether the transportation system is adequately serving existing land uses. Upon completion of Item No. 7 below, the City should be able to complete this analysis.

6. **Objection:** The element does not contain an analysis of the existing and projected transportation system to evacuate the coastal population prior to an impending natural disaster. [Rule 9J-5.019 (3) (c), F.A.C.]

   Recommendation: Include an analysis of the existing and projected transportation system to evacuate the coastal population prior to an impending natural disaster. The City should provide an analysis of the existing and projected transportation system to evacuate the coastal population prior to an impending natural disaster. The data must include designated evacuation routes. These data may be found at the Dade County Emergency Management Office, the Department of Community Affairs Division of Emergency Management, or the South Florida Regional Planning Council.

7. **Objection:** The element does not contain an adequate analysis of the projected transportation system levels of service and system needs based upon the land use categories, including their densities and intensities of use as shown on the Future Land Use Map, and the projected integrated transportation system. The analysis did not demonstrate integration and coordination among the various modes of transportation and did not address the need for new facilities and expansions of alternative transportation modes to provide a safe and efficient transportation network and enhance mobility. [Rule 9J-5.019 (3) (f), F.A.C.]

   Recommendation: Analyze the FLUM densities, intensities and mixed use patterns against the thresholds required to support transit. The City should compare the existing FLUM designations within the transit corridor to a professionally accepted source which has analyzed densities and intensities which support transit. One such document is the Dade County MPO document "Transit/Land Use Relationship Report." Where incompatible uses occur, an analysis should be conducted that assesses FLUM alternative that would be compatible. This analysis should be completed prior to the Dade County MPO Long Range Transportation Plan Model Update so that alternative land uses can be submitted to the MPO. The City should coordinate with Dade County regarding the submittal of land use data to the MPO.

8. **Objection:** Objective 1.2, which states that the City will coordinate the traffic circulation system with land uses shown on the FLUM, only refers to traffic circulation and not the entire multi-modal transportation system and does not ensure that existing and proposed population densities, housing and employment patterns, and land uses are consistent with the transportation modes. [Rule 9J-5.019 (4) (b) 4., F.A.C.]

   Recommendation: Upon completion of analysis as stated in Item No. 7, the City must revise Objective 1.2 such that the entire multi-modal transportation system is coordinated with the FLUM, and ensure that existing and proposed population densities, housing and employment patterns, and land uses are consistent with the transportation modes and services.

9. **Objection:** FDOT notes that the City completed a Finding of Necessity for redevelopment in February 1995 and recommended that 22 blocks along N.W. 36th Street and 15 blocks around Curtiss Circle be targeted for redevelopment. However, no analysis was provided to determine the potential opportunities of redevelopment on the multimodal transportation system. [Rule 9J-5.019 (3) (f), F.A.C.]

   Recommendation: FDOT recommends that an analysis be provided to detail the land uses which are proposed for the two redevelopment areas. The analysis should also provide information relative to the redevelopment areas impact upon the existing surface roadway system and the demand for transit in the City.

10. **Objection:** The element does not include an adequate analysis of the growth trends and travel patterns and interactions between land use and transportation, and the compatibility between the future land use and transportation element. The City has provided a general description of how the land uses are compatible with adjacent roads. This description, however, does not satisfy the requirements of the rule, nor would it support specific recommendations for policies and programs to ensure greater compatibility between the transportation and future land use element. [Rule 9J-5.019 (3) (d), F.A.C.]

    Recommendation: When the City completes the analysis required pursuant to Item No. 7 above, the City will have sufficient data and analysis to determine the effects of growth on the transportation system and vice versa.

11. **Objection:** The amendment did not adequately analyze how the City will maintain its adopted level of service standard for roads and transit facilities. The analysis does not show projected traffic and transit levels over the next five years and identify where LOS standards are expected to be exceeded. [Rule 9J-5.019 (3) (h), F.A.C.]

    Recommendation: Provide an analysis which shows projected traffic levels over the next five years and identify where LOS standards are expected to be exceeded and improvements to maintain LOS.

12. **Objection:** The amendment did not explicitly address and document internal consistency of the plan, especially its provisions addressing transportation, land use, and availability of facilities and services. While the City's response speaks in general terms of how the transportation element is consistent with other growth management goals of the comprehensive plan, it does not explicitly explain how the policies and programs of the transportation element support and further objectives and policies of the comprehensive plan components. [Rule 9J-5.019 (3) (I), F.A.C.]

    Recommendation: Explain in detail how the policies and programs of the transportation element support and further objectives and policies of other comprehensive plan components. The City's analysis should examine internal consistency such as, but not limited to, where the FLUM supports the transportation system, whether particular capital improvements are needed, and whether the transportation system supports infill development.

13. **Objection:** The element does not contain an analysis which identifies land uses and transportation management programs necessary to promote and support public transportation systems in designated public transportation corridors. In addition, Policies 1.13.2 and 1.13.3, defer the completion of establishing transportation demand management (TDM) and transportation system management (TSM) programs and strategies until 2006. The deferral is not supported by data and analysis and would allow the City to not meet a statutory requirement within the planning timeframe. [Rule 9J-5.019 (3) (j) and (4) (c) 6. and 7., F.A.C.]

    Recommendation: Include an analysis which identifies land uses and transportation management programs necessary to promote and support public transportation systems in designated public transportation corridors. If the City can adequately respond to Item No. 7 above, the land use component should be addressed. As for the transportation management programs, the City should identify transportation demand management and transportation system management programs and strategies that will promote transportation systems and designate public transportation corridors and revise Policies 1.13.2 and 1.13.3 at the time of adoption to implement these strategies.

14. **Objection:** Objective 1.3, which states that the City will coordinate with the plans and programs of the Dade County MPO, does not include coordinating with the Florida Department of Transportation and the Florida Transportation Plan. Further, the objective and implementing policies do not specify how the City will coordinate land use decisions with the update of the MPO Long Range Transportation Plan.

    Recommendation: Revise the objective to include a reference to FDOT and the Florida Transportation Plan. [Rule 9J-5.019 (4) (b) 3., F.A.C.]

15. **Objection:** Objective 1.6, which states that the City will provide efficient mass transit based on existing and proposed major trip generators, does not address the provision of efficient public transit services based on safe and convenient public transit terminal and land uses. [Rule 9J-5.019 (4) (b) 4., F.A.C.]

    Recommendation: Revise the objective to include a target by which they will meet this objective and address the provision of efficient public transit services based on safe and convenient public transit terminal and land uses. In addition, upon revising the objective the City must establish meaningful policies to implement the objective.

16. **Objection:** Objective 1.13 and Policies 1.13.1 through 1.13.4, which defer specific rule requirements until 2006, allow the City to not meet rule requirements until after the planning timeframe. Thus, the City has not met the rule provisions as required by Rule 9J-5.019, F.A.C. [Rule 9J-5.019 (4) (c) 3., 6., 7., 10., F.A.C.]

    Recommendation: Revise the policies to implement the rule provisions and establish policies, based on the data and analysis, that are required by Rule 9J-5.019, F.A.C.

17. **Objection:** The City states that there are several rule provisions which do not apply to the City and, thus, the City is not proposing to add

Exhibit 2.1 (Continued)
Department of Community Affairs Transportation Objections and Recommendations
City of Miami Springs

these required rule provisions as policies. The provisions are as follows:

Rule 9J-5.019 (4) (c) 12:	A coordinated and consistent policy with the future land use element to encourage land uses which promote public transportation in designated public transportation corridors; and
Rule 9J-5.019 (4) (c) 13:	Establishment of strategies to facilitate local traffic to use alternatives to the FIHS and protect its interregional and interstate functions.

The Department believes that these provisions are city functions and can be completed and implemented by the local government. A city can certainly allow for consistency with the FLUE which promotes use of mass transit and provide alternatives to driving on the FIHS such as signage programs. [Rule 9J-5.019 (4) (c) 12., and 13., F.A.C.]

Recommendation: These rule provisions must be addressed through policies, based on the data and analysis, that are required by Rule 9J-5.109, F.A.C.

18. **Objection:** FDOT raised an objection that the City utilized the State Functional Classification instead of the Federal Functional Classification. [Rule 9J-5.019 (2) (a) 8., F.A.C.]

Recommendation: FDOT recommends that the Federal Functional Classification be utilized.

19. **Objection:** FDOT raised an objection to FLUE Policy 1.1.4, which states that capacities are based upon FDOT's Table of Generalized Two-Way Peak Hour Volumes for Urbanized Areas or other compatible techniques, because the LOS analysis in the support document for the Transportation Element is based upon an average of the two consecutive hours experiencing the greatest volume. [Rule 9J-5.006 (3) (c) 3, and Rule 9J-5.019 (4) (c) 1., F.A.C.]

Recommendation: FDOT recommends that FLUE Policy 1.1.4 should be revised to be internally consistent and either utilize FDOT's LOS standards or an average of two consecutive hours experiencing the greatest volume consistent with Dade County.

20. **Comment:** Figure 2.2, showing significant parking facilities, was not completed during the proposed amendment. This map must be included with the adopted amendment.

21. **Comment:** Dade County provided additional comments that are included within the package. The City should respond appropriately to these comments.

22. **Comment:** Policy 1.1.1, which refers to Special Transportation Areas (STA), is not the current term for concurrency exception areas. FDOT recommends that the City delete all references to STA's within the plan and determine whether the TCMA designation is appropriate.

Exhibit 2.2
Transportation Element Guidelines

The guidelines below were provided to Mr. Steve Johnson, City of Miami Springs, by Mr. Paul D'Giuseppe, FDCA, via facsimile dated 2/9/98

Potential Short Term Guidelines

1) Rule 9J-5.019 (3) (a) states that an amendment must contain an analysis of the existing transportation system, levels of service, and system needs. The Department recommends that the City provide an analysis of the existing transportation system levels of service and system needs, based upon existing design and operating capacity; most recently available estimates for average daily and peak hour vehicle trips; existing modal split and vehicle occupancy rates; existing public transit facilities, including ridership by route, peak hour capacities, and headways; population characteristics including transportation disadvantaged; and the existing characteristics of trip generators and attractors. The City should coordinate with FDOT and the Dade County MPO to complete the analysis. The analysis must show how the transportation system is functioning and identify needs which will correct existing deficiencies of the transportation system.

2) The Department recommends that the City adopt interim policies with specific commitments to complete the required analysis by a date certain, concurrent with the completion of the Dade County MPO long range transportation plan model update. The policies should specify how coordination will occur with the MPO, Dade County, and FDOT regarding consistency between the land use element and the transportation element and regarding technical support for completing the transportation element.

The City should compare the existing FLUM designations within the transit corridor to a professionally accepted source, which has analyzed densities and intensities which support transit. One such document is the Dade County MPO document "Transit/Land Use Relationship Report." Where incompatible uses occur, an analysis should be conducted that assesses FLUM alternatives that would be compatible, and consistent with the City's plan. This analysis must be completed prior to the Dade County MPO Long Range Transportation Model Update, so that, alternative land uses can be submitted to the MPO to resolve incompatibilities between the transportation system and land use. The City should coordinate with Dade County regarding the submittal of land use data to the MPO. As the City has identified redevelopment areas, the analysis should examine the potential opportunities for redevelopment on the transportation system and the impact of redevelopment on the transportation system.

Potential Long Term Guidelines

1) The following analysis requirements are dependent upon the Dade County MPO completing the long range transportation plan model update.

- An analysis of the availability of transportation facilities and services to serve existing land uses. [9J-5.019 (3) (b), F.A.C.]
- An analysis of the availability of transportation system to evacuate the coastal population prior to an impending natural disaster. [9J-5.019 (3) (c), F.A.C.]
- An analysis of the growth trends and travel patterns and interactions between land use and transportation, and the compatibility between the future land use and transportation elements. [9J-5.019 (3) (d), F.A.C.]
- An analysis of the projected transportation system level of service and system needs based upon the future land use categories, including their intensities or densities, and the projected integrated transportation system. [9J-5.019 (3) (f), F.A.C.]
- The analysis shall consider the projects planned for in FDOT's work program, the long range transportation plan and traffic improvement program (TIP) of the Dade County MPO, and the Metro Dade Transit Authority. [9J-5.019 (3) (g), F.A.C.]
- The analysis shall demonstrate how the City will maintain its adopted level of service standard for roads and transit facilities. [9J-5.019 (3) (h), F.A.C.]
- The analysis shall address internal consistency of the plan, especially its provisions addressing transportation, land use, and the availability of facilities. [9J-5.019 (3) (i), F.A.C.]
- An analysis which identifies land uses and transportation management programs necessary to promote and support public transportation systems in designated public transportation corridors. [9J-5.019 (3) (j), F.A.C.]

Upon completing these analyses, the City will have to include the required goals, objectives, and policies pursuant to 9J-5.019 (4). The Department recommends that the City submit the goals, objectives, and policies upon the completion of the data and analysis as discussed in the short term and long term analysis.

Exhibit 2.3
Transit/Land Use Relationship Report
Prepared by Gannett Fleming, Inc., Planners and Engineers, Consultants to the Metro-Dade County, Metropolitan Planning Organization, December 1995. The following report is an abridgment of the above styled document. The material preceding the page numbers in parentheses indicates the report page number.

A study has been conducted that compared Metro-Dade County's current land use development policies with the current literature regarding the relationship between transit and land use development. In addition, inter-agency relationships regarding transit and land use planning are reviewed, and land use allocation models are discussed. The study area for this task included the area between the Urban Infill Area (UIA) and the Urban Development Boundary (UDB) and the Urban Expansion Area (UEA). (page i)

The recommendations that resulted from this study are summarized and included in this section by subject area.

Residential Development Recommendation

- Periodically review current and projected socio-economic data to identify areas that meet suggested residential transit-supportive thresholds.
- Where possible, initiate amendments to the Future Land Use Map that would follow suggested thresholds for residential densities along designated Future Rapid Transit corridors.
- Applications to change the Future Land Use Map within identified transit-supportive areas should be reviewed in terms of existing and planned transit service. Does the change help support existing and planned transit service?

Non-Residential Development Recommendation

- Periodically review current and projected socio-economic data to identify areas that meet suggested employment transit-supportive thresholds.
- Continue to concentrate employment activity along planned Future Rapid Transit corridors, particularly within designated Metropolitan Activity Centers. Where possible, initiate amendments to the Future Land Use Map to increase employment densities within designated Metropolitan Activity Centers, along designated Future Rapid Transit corridors, or within highly developed employment areas identified by the review of the socio-economic data. (page ii)
- Applications to change the Future Land Use Map within identified transit-supportive areas should be reviewed in terms of existing and planned transit service. Does the change help support existing and planned transit service?

Mixed-Use Areas Recommendation

Use a zoning overlay district to extend the concept of Metropolitan Activity Centers to other areas along Future Rapid Transit corridors. The zoning overlay district should include mixed-uses that are transit-supportive and oriented to the size of the area encompassed by the overlay district such as high-density commercial areas, urban areas, neighborhoods, or secondary areas (lands no further than one mile from a transit stop).

Land Uses Oriented to Transit Use Recommendation

Develop a zoning overlay district that correlates to designated Future Rapid Transit corridors or major transit stops and includes a detailed description of land uses that promote transit. This district would be developed in conjunction with extending the concept of Metropolitan Activity Centers into other transit-supportive areas.

Buildings and Activities Physically Oriented Toward Transportation Services Recommendation

- Update the Activity Center description listed in the Comprehensive Development Master Plan, Future Land Use Element to include language regarding building orientation to transit stops.
- Actively pursue the Metro-Dade Transit Agency's participation in site design for new construction or improvements to existing sites to ensure that transit stops are more oriented toward safety and convenience for the transit rider.
- Review and update the Zoning Code to include transit-oriented zoning regulations for site design, parking and building setbacks for all development that falls within a designated transit zone. (page iii)

Walking Distances at a Pedestrian Scale Recommendation

Include a measurement for specific pedestrian walking distance standards in all transit-oriented sections of the Zoning Code.

Minimal Parking Recommendation

Update the Zoning Code to include transit-oriented parking standards for development along Future Rapid Transit corridors and adjacent to transit stops.

Additional Measures for Improving Transit Ridership

- Metro-Dade County currently has a provision regarding Severable Use Rights, Chapter 33B, Areas of Critical Environmental Concern, Metro-Dade County Development Code. This provision is similar to providing the option of transfer of development rights and could be applied to designated transit zones in an effort to promote transit-supportive development. Use TDR to concentrate development intensity near transit stops.
- If a specific use creates a large number of trips that could be served by transit, the County should develop incentive measures that will help to locate the development within a designated transit zone.
- The draft Year 2015 Long Range Transportation Plan includes planned transit corridors. In addition, the Future Land Use Map designates Future Rapid Transit corridors, thus indicating a need for County right-of-way acquisition. The Zoning Code covers right-of-way plans and minimum widths. Review to ensure that enough that enough right-of-way is available for the planned transit improvements. If not, the Zoning Code needs to be amended and action needs to be taken to acquire the appropriate right-of-way. (page iv)
- The Comprehensive Development Master Plan, Future Land Use Element, includes the following objective and policy:

  Objective 7: Beginning in 1989 Dade County shall maintain a process for periodic amendment to the Land Use Plan Map, consistent with the adopted Goals, Objectives and Policies of this Plan, which will provide that the Land Use Plan Map accommodates urban expansion at projected countywide rates.

  Policy 7L: Applications requesting amendments to the Comprehensive Development Master Plan Land Use Plan Map shall be evaluated to consider consistency with the Goals, Objectives and Policies of all Elements, other timely issues, and in particular the extent to which the proposal, if approved, would:

  1) Satisfy a deficiency in the Plan map to accommodate projected population or economic growth of the County;
  2) Enhance or impede provision of services at adopted LOS Standards;
  3) Be compatible with abutting and nearby land uses and protect the character of established neighborhoods; and
  4) Enhance or degrade environmental or historical resources, features or systems of County significance.

  This policy needs to be revised to include transit orientation. Add the following language to Policy 7l: 5) Be compatible with suggested land uses that promote transit, particularly if the application is located within a designated Future Rapid Transit corridor or designated transit-supportive area.
- The section needs to be reviewed regarding transit orientation, specifically how does the location of these Traditional Neighborhood Developments (TND's) tie into the planned transit corridors for the UDB and UEA. [Traditional Neighborhood Development Zoning Code] (page v)
- The Activity Center concept, [in the Dade County Comprehensive Plan] needs to be expanded to more areas along the transit corridors such that development at major transit stops will also be transit-supportive. The Sacramento County Transit-Oriented Design Guidelines, provides examples of development for urban, neighborhood, core commercial, and secondary transit-oriented areas.
- The MPO and MDTA should help in drafting transit-oriented land use policies to be adopted in the Comprehensive Development Master Plan and Development Code.
- There exists a good deed (sic) of ongoing research and progress in the area of land use allocation models. Currently, the U.S. Department of Transportation is funding a Travel Model Improvement Program to research and recommend improvements to land use allocation models. (page vi)

  Before Metro-Dade County invests funds and manpower into the development of a land use allocation model, it is recommended that the County utilize the resources of this federally funded program. (page vii)

As mentioned in the report, Guidelines for Transit-Sensitive Suburban Land Use Design, the past several decades have seen rapid growth in the level of complexity of suburban activity. Suburban areas which were once bucolic bedroom communities for commuters into a central business district have become multifunctional areas with a full range of employment, business and institutional activities which rival the downtowns of most metropolitan areas. However, the travel patterns in these once rural areas are highly diverse with trips from many origins to many destinations and few concentrated corridors of demand. Activity Centers and trip generators are poorly tied to each other and scattered in many locations.

Myth: Stopping development will stop traffic growth.
Fact: Even with no new development, traffic would increase due to the population's growing mobility.

Census data show that even in areas of the United States where the population has declined, employment levels and travel have increased. While new development obviously brings new traffic to an area, the growing mobility of the population has a more far-reaching effect on travel growth. (page 1-1)

Myth: Reducing densities will reduce traffic.
Fact: Limiting density of development does not reduce traffic except in the immediate area. Lower-density residential, retail, or office projects generate more, not less, overall traffic.

Traffic does not respect boundaries, and such a policy, while limiting traffic at individual sites, causes sprawl -- a low density, auto-dependent development pattern. Thus, a reduction in traffic in one area is likely to be matched by traffic increases elsewhere -- unless density is reduced over an area so extensive that it decreases the total level of market development. In addition, research shows that higher density residential and office projects generate fewer driving trips and more transit use per unit than do low density projects.

Myth: People must change their attitudes so that they depend less on the automobile.
Fact: Commuters' choices are based on comparisons of cost and convenience, not on abstract values. It is not attitudes that must be changed, but the relative service and cost of options offered to commuters.

Transportation analysis have recognized that consumer choices are made based on rational comparisons of time and cost, rather than on abstract values or attitudes. Decreasing the availability of parking, combining trip uses or raising the price of gas will quickly encourage them to consider measures of conservation. (page 1-2)

The best evidence on how careful coordination of land-use planning and transit development can affect travel choices is from abroad, in cities like Stockholm and Sweden, where high rates of transit usage are a result of government introducing land-use controls that concentrate urban growth in

Exhibit 2.3 (Continued)
Transit/Land Use Relationship Report

defined linear corridors that are well-served by rail or buses operating on dedicated rights-of-way. Several studies have shown that a doubling of residential densities correlated with reductions in annual vehicle miles traveled in the range of 20 to 30 percent. ***Conclusions concerning the sensitivity of trip generation rates and modal splits relative to changes in land-use mixtures are more difficult to confirm*** [emphasis added]. (page 1-3)

Matched-pair comparisons in several metropolitan areas as well as hypothetical simulation show transit-oriented neighborhoods average less vehicle miles traveled (VMT) per household (anywhere in the range of 10 percent to 45 percent) than auto-oriented ones. Evidence also points to higher incidences of walk and transit modal splits in more traditional neighborhoods. Several studies around transit stations confirm that proximity and, to lesser extent, building density influences modal splits.

For transit-oriented development to produce significant mobility benefits, the evidence suggests that both origins and destinations of trips must be within close walking distance of facilities--another indication that clustered and balance environments are crucial in winning over customers to mass transit.

For this report, the term transit refers to services available to the public including local bus service, express bus, rail, and rideshare services such as carpools and vanpools. (page 1-4)

1.2.1 Land Use Densities that Encourage Ridership

Low density residential areas generally cannot sustain public transit. However, these areas may benefit from dial-a-bus, park-and-ride facilities, car/van pools and similar services. For residential areas, ridership increases as density increases.

Based on Regional Plan News, *Where Transit Works: Urban Densities for Public Transportation*, average relationships between residential density and transit use can be summarized as follows: (page 1-6)

- At densities between 1 and 7 dwelling units per acre, transit use is minimal.
- A density of 7 dwellings per acre appears to be a threshold above which transit use increases sharply and is necessary to support bus service every 30 minutes.
- At densities above 60 dwellings per acre, more than half the trips are made by public transportation.
- The reduction in auto trips (and total trips) per person and the increase in transit trips with higher density is most pronounced among middle-income households.

The report also states the reasons for increased transit use with higher density, which include:

- Higher residential density tends to cut auto ownership. Comparing households of the same income and size, a tenfold increase in residential density reduces ownership by about 0.43 autos per household. This is so because at higher densities auto storage and use are less convenient and more costly. It may also be that higher density does not cause higher transit use but only correlates with higher transit use because it also correlates with lower household income which also correlates with higher transit use and may actually cause it.
- The presence of rail transit suppresses auto ownership.
- Auto ownership is further influenced by the habitual destination of the trips a household makes. Two households residing at the same density will own different numbers of autos depending on whether their workplace is in a downtown or in a spread suburban development.

Among auto owners, transit use is further affected by two factors:

- The density of the nonresidential destination--the higher it is, the more likelihood that auto owners will use transit.
- The quality of transit service--availability. (page 1-7)

Table 1-1 summarizes the observed minimum residential thresholds for promoting transit usage.

1.2.1.2 Non-Residential

The report, *Where Transit Works: Urban Densities for Public Transportation*, states that residential densities in the range of 7 to 15 dwelling units per acre can support moderately convenient service by any transit mode if there is a place to go. High residential density by itself will do little for transit if there is no dominant employment or commercial destination.

In addition to the density of the non-residential area, the mixture of land uses within the employment center and the proximity of the center to the residential areas is also important. For public transit to succeed land uses should have the potential to generate ridership throughout the day, and ideally during the off-peak periods, midday, evenings, and weekends. A mixed-use area containing restaurant, a museum or theater, and retail stores has a greater potential to attract bus and rail riders than an area with only retail stores. Adding housing also generates additional ridership. (page 1-8)

The report [Urban Densities for Public Transit] also provides examples of land use policies affecting transit use. Four possible land use scenarios are provided and the recommended policy is discussed as follows:

1. Clustering of dividing non-residential space.
   For example, 10 million square feet are to be added to a growing urban area. One option is to put the non-residential floorspace into two spread clusters, each five million square feet in size. Another is to create a new downtown of 10 million square feet. In the second case, per capita trips by transit within a 3 to 5 mile radius will be 50 to 70 percent higher than in the first case, keeping residential density the same.
2. Enlarging downtown size or raising nearby residential density.
   For example, the options are to double the size of a downtown from 10 to 20 million square feet, or to double the residential density within a few miles of it from 15 to 30 dwellings per acre. The former will increase per capita trips by transit in the vicinity of that downtown three to four times more than the latter.
3. Increasing residential density near downtown or farther away.
   For example, the options are to double residential density from 5 to 10 dwelling units per acre either within one mile of a downtown of 10 million square feet or at a distance of 10 miles from it. In the first case, public transit trips per capita in the affected area will increase seventeen times as much as in the second case.
4. Scattering apartments or concentrating them near transit.
   For example, a rapid transit station is located five miles from a downtown of 50 million square feet of non-residential floorspace. At a density of 15 dwelling units per acre, the square mile surrounding the station will send about 620 trips a day to the downtown by transit. Suppose speculative development scatters apartments throughout the square mile, raising its density by 20 percent. That will increase transit ridership at the station by about 24 percent. But if the apartments are clustered within 2,000 feet of the station, preserving the rest of the neighborhood intact, transit ridership will increase by 34 percent or more, at least a rail carload of 62 people a day will be added not from any increase in average density but only from a different arrangement of the new development within the square mile. (page 1-11)

1.2.2 Mixed-Use Area

According to the report, *A Guide to Land Use and Public Transportation*, a major reason suburban residents do not use transit is due to the need to make trips to multiple locations throughout the day. When uses are consolidated, the automobile's advantage over transit is greatly reduced.

A study conducted by Cervero *(America's Suburban Centers: The Land Use-Transportation Link)* concluded that dense, mixed-use suburban downtowns (sub-cities) averaged more than 20 times as many transit commute trips by their workforce as sprawling, low-density, and single-use office parks. A substantial retail component increases transit and ridesharing by around 3 percentage points for every 10 percent increase in floorspace devoted to retail-commercial uses. To achieve maximum transit usage, the density of the office and commercial uses should be high near transit stops and remain fairly high within 1/4 mile of the stops. (page 1-12)

1.2.3 Land Uses Oriented to Transit Use

Land uses oriented to transit use include a concentration of demand (density), a regular trip pattern and little need to carry large parcels. In the publication, *The New Suburb: Guidelines for Transit-Sensitive Suburban Land Use Design*, several land uses were found to be transit compatible. Table 1-3 provides examples of land uses with corresponding potential transit users. (page 1-13)

1.2.4 Buildings Physically Oriented Toward Public Transportation Services

Buildings and Activity Centers must provide convenient and attractive access to the transit user. People are not motivated to use public transportation if buildings do not provide quality access, even if the building is located within a short distance of the transit stop. Entrances and paved walkways must lead directly to a bus stop, park-and-ride lot, or transit station. The transit stop should be near the building entrance, which may require parking and open space to be located behind the building. (page 1-15)

The report, *Designing for Public Transit in Suburban Areas*, states that one of the most significant ways to improve the ability of buses to serve suburban office complexes is the improvement of site plans to cluster buildings around a focal point which can serve as a transit stop. Buses stopping at the roadside expedites the bus trip, but increases the distance of the walk to reach the individual buildings. Bus service which enters each driveway individually reduces the walk for passengers, but creates a very circuitous journey which inconveniences riders and increases overall travel time.

The report suggests clustering the buildings to achieve a higher concentration of workers at one location, thus justifying the higher frequency of service, and reducing overall travel time. The report provides the following suggested model language for master plan ordinances:

Clustering of Buildings: Buildings shall be clustered to the maximum extent feasible, to provide for efficient pedestrian circulation. Building clusters shall be organized around an identifiable and easily reached transit stop to facilitate the use of transit and car pooling. Transit stops shall include weather protection. Transit stops shall be linked to all buildings by paved sidewalks, a minimum of four feet in width, and laid out for appropriate drainage. Transit stops shall have a recessed bay capable of handling an articulated sixty foot long bus. They shall be marked with signs identifying the transit stop and indicating that it is a No Parking Zone. If possible, signage should include identification of the transit routes, time of operation, and frequency of service provided.

Layout of Parking Lots and Transit Stops: Transit stops shall be located so that the walk between the building and the stop is less than the walk to the parking lots. Parking lots shall be organized so that spaces nearest the building accommodate handicapped individuals, van pools, car pools and single-occupant autos in that order. Parking for single-occupant autos shall be located furthest from the building.

Bus Service to Shopping Malls: Plans shall include provisions to encourage bus use. An identifiable bus stop shall be located at an appropriate mall entrance, preferably the main public entrance to the mall proper. The stop will include sufficient waiting space to safely accommodate estimated peak transit ridership. Adequate weather protection, visibility, (page 1-17) signage, seating and lighting will be provided in order to maintain a safe and attractive environment. Bus pull-out lanes should be provided to allow buses to stop clear of passing traffic. Bus stops should be signed to prohibit auto access and parking. Adequate space should be provided in the parking lot close to the bus stop for temporary layover of terminating buses between runs and for staging buses needed for peak load periods. Parking lots and mall access roads should be laid out to facilitate circulation of buses and to reduce conflicts with auto traffic and cars pulling into and out of parking spaces. Bus and truck access routes shall be designated on the site plan, and pavement design for these routes shall be adequate to support bus and truck axle loads.

Exhibit 2.3 (Continued)
Transit/Land Use Relationship Report

The report goes on to point out that while model language such as the above can assist in laying out individual sites more appropriately for transit, the issue of linking service roads may not be easily addressed in this manner. It may be nec essary, in this instance, for the planning board to lay out a general master plan for an area which identifies a proposed location for such service roads. The degree of difficulty of laying out such a service road system will depend to a large measure on the magnitude of development and the size of lots proposed. Thus, it would need to be tailored to each specific location. Generically, however, a large office complex might be laid out with an internal loop service road. A "U" shaped service road might also work well to expedite transit service.

The report also suggests that it may be possible for local jurisdictions to create zoning incentives for developers to provide such facilities for transit. Such incentives could allow the developer to build fewer parking spaces in exchange for physical improvements to encourage transit use. In areas where developers must build parking garages to accommodate all the parking required under local zoning ordinances, transit incentives could be financially attractive. These incentives could also be extended to allow developers to subsidize transit operations in exchange for reduced parking ratios. (page 1-18)

1.2.6 Minimal Parking

The ridership for all types of public transportation increases as the price of parking increases or as the availability of parking decreases.

A zoning ordinance can be used as a way to limit the amount and location of parking. In addition to limiting parking, the ordinance can require that parking lots be located at the sides or rear of buildings so that the "front door" convenient access is for transit users and pedestrians, thus further promoting ridership.

Raising the price of single-occupancy vehicle (SOV) parking or reserving parking for rideshare vehicles is another way to promote transit ridership. (page 1-19)

A suggested document that would be useful in developing additional language for a zoning ordinance is *Model Parking Code Provisions to Encourage Ridesharing and Transit Use (including A Review of Experience)*.

Additional avenues are available to encourage and promote development that will support public transit. These measures include the following:

1. Providing Transfer of Development Rights (TDRs). Development rights densities are transferred from one location to another. Such TDRs ona be utilized to increase densities at a transit stop and within the service area of transit stops.
2. Discouraging public facilities that will generate a significant number of trips from locating in rural and suburban areas. Instead, these activities should be located in areas where public transit is or will be available.
3. Reserving right-of-way for future public transit use.
4. Providing for transit-sensitive review of Land Use Plan amendments, Long-Range Transportation Plan amendments, site plans and development proposals. The needs for transit should be considered in the development review process. (page 1-21)
5. Creating Traditional Neighborhoods that are transit-oriented and designed to reduce auto-dependency.
6. Creating a Transit Corridor District (TCD), similar to a Planned Unit Development (PUD) District. The district regulations should encourage mixed uses, and include uses that relate well to public transit rather than the automobile.

As of late 1995, the City of Oakland, California is in the process of developing a specific zoning category, the *Transit Village Zone*, that will encourage high residential density and mixed-uses around transit stations, similar to the development that has already occurred around other Bay Area Rapid Transit (BART) transit stations. A draft of this Transit Village Zone is included in Appendix C.

Topics addressed by the design guidelines include:

1. changing off-street parking requirements (require/permit a lesser number of spaces. (page 1-22)
2. user friendly transit stops (i.e., proximity to building/activity; direct, hard surfaced access, weather protection, etc.).
3. standard signage for transit stops.
4. transit stops that are compatible with the surrounding neighborhood.
5. provisions for recreational opportunities.
6. landscaping requirements.
7. encouragement of shared parking facilities (daytime vs evening and weekend usage).
8. promotion of bicycle access.
9. provisions for transit vehicle use and pedestrian access in new shopping centers, office complexes, etc. (page 1-23)

1.2.9 Success Stories for Promoting Transit

There are recent developments in several cities that have utilized the aforementioned compatibility factors to promote and encourage development of public transit. Examples of these developments are listed below.

- In California, in the last 10 years, 26 large housing projects have been built within 1/4 mile of rail stations.
- Surveys have found that residents living within 1/4 mile of a California rail station are three times as likely to commute by rail as is the average worker in the same city. The two most important determinants of rail usage were:
  1. whether trip destinations were within walking distance of rail stops; and
  2. whether parking is free at employment location (higher parking cost equals greater transit usage). (page 1-25)
- In San Francisco, California over 90 percent of the 22.5 million square feet of office space built since 1965 is within 1,500 feet of the four downtown BART stations.
- In Oakland, California, approximately 1.5 million square feet of office space has been built within 1,500 feet of two downtown Oakland BART stations.
- BART's influence on housing construction has been less pronounced than its influence on office construction. Only a small number of high-density nodes of residential development have occurred around BART stations. This is due, in part, to public policy decision. Nine residential or mixed residential and commercial areas around BART stations were down-zoned in response to residents' wishes to preserve the existing character of the neighborhoods.
- Both Santa Clara County Light Rail and BART are converting surface parking lots at several stations into residential/retail projects. The conversion is decreasing the parking supply, but will most likely improve transit ridership because less available parking equals increased transit usage.
- Several large housing projects have recently been built in Santa Clara County, California that rely on rail proximity as a marketing pool. Plans are underway to build more than 13,700 units (12-40 DU/AC) near light rail stations.
- The San Diego Trolley Line has encouraged development along its corridors. From 1980 to 1984 several developments were built adjacent to the San Diego Trolley Line. (page 1-26)
- Portland, Oregon has increased commercial, residential and office space in the downtown area due to integration of mixed-uses, a bus transit mall, and major light rail corridor. Access has been increased to suburban communities by the light rail system, and higher density residential and commercial uses are being encouraged around rail stations.
- The MARTA Lennox Station in Atlanta, Georgia, is a good example of a joint public/private development that includes hotels, office buildings, the Lennox Square Mall, and high-density residential. In addition, the Ballston Station, built at a Virginia suburb in the Washington Metro system, is an example of the use of air rights for a major retail and office complex.
- Examples of major event Activity Centers located on transit routes include Seattle's Kingdome (intercity rail station), Portland's convention center and sports arena (light rail stop), Baltimore's new baseball park at Camden Yard (adjacent to commuter and light rail stations), and RFK Stadium (transit stop on the Washington Metro system). (page 1-27)
- Linking light rail and land use has made the difference in securing funds to build and expand Portland's MAX light rail system another 25 miles; in November 1994, funding for MAX was passed by a three-to-one vote. The Federal Office of Management and Budget was persuaded to provide funding for the light rail project based on land use measures that were guaranteed through enactment of local and regional plans. The transit and land use connection provided substance for the groups advocating livable communities and the rail starts are being marketed as capital investment strategies to promote urban revitalization. In light of attacks on cost effectiveness, the local community attested to the fact that the rail project has had benefits to the community far beyond congestion relief. Portland considers the MAX to be an integral part of the regions 50-year plan to manage growth and stop sprawl. (page 1-28)

Moving People in Florida: Transit, TDM and Congestion? (page 2-2)

Year 2015 Land Use Densities. Figure 2-2 represents the areas that will have the minimum projected density to support transit (either local or express bus, or rail transit) of 7 dwelling units per acre and/or 5,000 persons (employment and households) per square mile by the year 2015.

Applications to change land uses on the Future Land Use Map within these identified transit-supportive areas should consider existing and planned transit as part of the Future Land Use Map amendment review process. The amendment should be reviewed in terms of its ability to further support existing or planned transit service and designated Future Rapid Transit corridors.

The draft Year 2010 Long-Range Transportation Needs Plan recommends additional premium transit (rail transit) along the S.R. 836 (Dolphin Expressway) and U.S. 1 corridors and recommends additional major transportation investments along the Kendall Drive corridor. The Adopted 2000 and 2010 Land Use Plan for Metro-Dade County, Florida designates the U.S. 1 and Kendall Drive corridors as Future Rapid Transit corridors. (page 2-8)

Where the residential density does not exist to support planned Future Rapid Transit corridors, however, the County Commission may want to consider amending the Future Land Use Plan to increase residential densities along these designated corridors. The increased density designations could serve to encourage further development that would support the designated transit corridors. (page 2-10)

[The Dade County Comprehensive] Plan states that floor area ratios (FAR's) in the center of Regional Activity Centers designated on the LUP map should average not less than 4.0, including parking structures, in the core of the center and around mass transit stations, and should taper to an average of not less than 2.0 near the edge of the center. Average FAR's, including parking structures for developments near the core of Metropolitan Activity Centers designated on the LUP map should be not less than 3.0 at the core and should not taper to not less than 0.75 at the edge.

The locations of these Metropolitan Activity Centers and the desired mix of land uses that are shown on the Future Land Use Map (in the Dade County Comprehensive Plan) are consistent with the non-residential transit thresholds described in the literature (Section 1.2.1). (page 2-13)

The Comiprehensive Development Master Plan, Future Land Use Element includes an objective and two policies that dictate a desire to continue concentrating employment into areas that can support transit.

> **Objective 3:** The location and configuration of Dade County's urban growth from 1989 through the Year 2010 shall emphasize concentration around centers of activity, renewal and rehabilitation of blighted areas, and contiguous urban expansion when warranted, rather than sprawl.
>
> **Policy 3A:** High intensity, well designed Activity Centers shall be facilitated by Metro-Dade County at loctions having high countywide multi-modal accessibility.
>
> **Policy 3B:** Land in the vicinity of public mass transit stations shall be planned and developed in a manner that is compatible with, and supports the transit system.

Exhibit 2.3 (Continued)
Transit/Land Use Relationship Report

Based on these policies and the employment concentration trends shown on Figure 2-4, the Future Land Use Map needs to be reviewed and possibly amended to further increase employment densities within Metropolitan Activity Centers and along designated Future Rapid Transit corridors. (page 2-14)

The [Dade County Comprehensive Plan] description of an Activity Center is as follows:

> "Activity Centers and the mix and configuration of land uses within them are designed to encourage convenient alternatives to travel by automobile, to provide more efficient land use than recent suburban development forms, and to create identifiable "town centers" for Dade's diverse communities."
>
> "The core of the centers should contain business, employment, civic, and/or high- or moderate-density residential uses, with a variety of moderate-density housing types within walking density from the centers. Activity Centers shall accommodate a concentration of uses and activities which will attract large numbers of both residents and visitors. Uses may include retail trade, business, professional and financial services, restaurants, hotels, institutional, recreational, cultural and entertainment uses, moderate to high density residential uses, and well planned public spaces. Incorporation of residential elements are encouraged in all centers." (page 2-16)

The idea of an Activity Center could be expanded to neighborhoods or office complexes that are adjacent to designated transit corridors. Mixed-uses could be permitted that not only blend with the character of the area, but have the propensity to promote transit ridership. An Activity Center denotes a larger and more densely populated area that will most likely be a major transit stop. Smaller-scale transit-oriented neighborhood areas could be clustered around express bus stops and provide the added convenience of small office employment, shopping, or pickingup a child at a day care facility; all uses that may not normally be located at a transit stop. In addition, small-scale park-n-ride areas or bicycle storage could be provided behind the cluster of buildings such that a person may be able to shop and go directly home. (page 2-17)

Examples of land uses that generally do not promote transit ridership include low-density residential (less than 7 DU/AC), home improvement centers (requires transporting large objects), car dealerships, and drive-in oriented food franchises. (page 2-18)

As stated in the November 1995 issue of Surface Transportation Policy Project Progress Newsletter:

> "Optimizing public investments requires a regional approach. Investments in inner-cities and urban businesses ought to be linked to regional opportunities, not isolated by gridlock, quarantined by exclusionary zoning, and drained by suburban growth. Investments in transit should be supported by land use patterns which put riders and jobs within an easy walk of stations and by a coherent regional plan which strategically clusters development."

Metro-Dade County has already implemented several land use policies that link transit service to residential and commercial land use development within the UIA. These policies, however, need to be reviewed, updated, and applied to all areas of the County such that transit becomes a viable transportation option to persons living west of the UIA. (page 2-29)

4.0 LAND USE ALLOCTION MODELS

This section discusses the potential use of state-of-the-art land use allocation models in projecting the relationship between transportation and land use planning for Dade County. In addition, decisions, or assumptions, that need to be made prior to the use of a land use allocation model are also addressed.

Long-term transportation planning depends on future land use forecasts. However, the location of future land use is also dependent on the transportation system. Areas made more accessible through highway and transit improvements tend to develop to a greater extent than they would have otherwise.

Coordinating land use and transportation has been described as a "chicken and egg" problem, due to confusion over what comes first. Ideally, comprehensive planning would establish a community's [and state] preferred development patterns and a transportation system to fulfill that desired future. In turn, state and regional transportation planning would establish the statewide network, and access would be restricted between and around built areas to preserve the regional movement of traffic. In this scenario, land development patterns would support a variety of modal alternatives and be designed so as not to conflict with regional mobility objectives.

Land use and transportation are rarely coordinated to achieve growth management objectives. Instead, transportation planning responds to growth by increasing access to land and services. As transportation facilities are supplied to accommodate growht, they generate additional demand for land development. Corridors and interchange areas become the focus of intense development and growth radiates along the corridor and outward- ultimately creating another cycle of growth and traffic congestion. In this context, a preferred balance between managing and accommodating growth is seldom achieved. (page 4-1)

One problem is that future land use plans and transportation models determine future need by projecting past trends into the future. This assumes that communities have little control over their design future. Yet local policy could be formulated to influence growth patterns through infrastructure investment decisions, land use planning, and strong regulatory measures. A tool to facilitate the formulation of this local policy is through the use of linked land use/transportation network models.

A land use allocation model will meet two important needs of transportation planners and land use planners. First, it will provide them with an automated tool for forecasting the future allocation of employment and residential activities throughout the region. Land use forecasts are tranditionally developed by land use planners in a bottom-up approach. Future land use is assigned manually to each transportation analysis zone (TAZ).

The second major need that the Land Use Allocation Model will meet is that it will provide planners with a tool to assess the impacts of changes in either the transportation system or land use policies on the distribution of future employment and residential activity in the region. (page 4-2)

Inclusion of feedback is required to address concerns of critics of traditional transportation planning. Recently, Nadis and MacKenzie wrote:

> Building more roads, or widening existing roadways, has been the traditional response to traffic problems. History shows, however, that this approach leads only to increased traffic and lower air quality. Congestion forces people to alter their travel routes and to avoid, if possible, driving at peak travel times. New roads may initially alleviate congestion, but soon encourage people to shift from other routes, or from other modes of transport, until the new roads are as badly congested as the old ones were.

In another recent book, Downs argued that local land use controls have also been ineffective in preventing further increases in congestion. By diverting future growth to other communities, growth management policies also shift future traffic there. Finally, by spreading future development of the entire metropolitan area during any period over a larger territory than it would otherwise have occupied, growth-management policies require motorists to drive longer distances, adding to the metropolitan area's total traffic flows, and increasing future traffic congestion.

The following sections present an overview of some of the land use/transportation models currently in use or under development.

A mechanical accounting model that develops land use scenarios based upon simple input scenarios. The model adjusts either population data or employment data, but not both within a single model run. (page 4-3)

Most of the "modeling," or determining where and when growth will occur, is done by the user rather than by the computer. Therefore, the model is highly dependent on the skill of the model user. The computer simply applies the user's skill and knowledge consistently across a land use database.

In Lowry-type models, basic employment is considered the fundamental engine of growth. It is specified by zone as a model input. The allocation to zones is done with a gravity model. In general, land use is allocated to zones with shorter travel times, constrained by zonal control totals. (page 4-4)

A weakness in most Lowry-type models is that the land use model is calculated independently of the highway network model. Putman integrated the two models. By running them iteratively, new travel times calculated by the highway network model served as inputs to the land use model, and new land use calculated by the land use model served as an input to the highway network model.

For example, two major extensions made by the Puget Sound Council of Governments are (1) inclusion of a generalized accessibility variable to all locations and household locations in the region, and (2) use of a composite multi-modal cost impedance measure, rather than automobile travel time.

Gravity-type models have dominated practical applications of land use models. Advantages include modest data requirements, few parameters to estimate, and simple calibration. Disadvantages of the [gravity] model include the lack of a formal underlying economic or behavorial theory, and the lack of a supply side in the model. This later deficiency precludes use of this type of model for analyzing the effects of economic policies and trend, including tax policy and mortgage rates.

Land use models designed to address the deficiencies in gravity-type models have much more substantial data requirements and involve much more complex estimation and calibration. We group these models as economic equilibrium models. However, the improved theoretical underpinnings are more than offset by losses in practicality. The most complete implementation of these approaches to a real urban area is for Chicago by Anas. Even this implementation included only residential land use. (page 4-5)

Within the [land use allocation] model, the land use allocation process is heavily influenced by three major sets of factors. First, future land use is specified by type. Since the model is a land use allocation model, it does not forecast economic activity. Instead it simply distributes/allocates forecasted residential and employment growth. Where this growth can be distributed is controlled by the specified future land use classification.

Second, land use allocation is affected by accessibility. Accessibility is a function of composite impedances calculated by the transportation planning model. These composite impedances are based on the availability of highway facilities and transit services, their operating characteristics, and their level of congestion. Thus, travel time is a critical element of the composite impedance formulation. Third, land use allocation is restricted by the availability of developable land.

This structure allows integration of the land use allocation model and the transportation planning model. Feedback between the models is incorporated in two ways. The land use allocation model provides the socioeconomic data inputs which drive the transportation planning model. The transportation planning model, in turn, determines accessibility which is used for future iterations of the land use allocation model.

A new land use increment is allocated simultaneously across all land use types and all zones, based upon conditions at the end of the previous time interval. The model is of the dynamic rather than equilibrium type. Future land use is partially determined by past land use, and by the path taken linking the past with the future. This is how urban areas really develop; the future is based on the past. (page 4-9)

In addition to residential and employment land uses, the model will deal specifically with hotel/motel units and with school enrollments.

Running the model permits the introduction of special considerations at any point within the model's iteration. Special knowledge possessed by local experts can be input into the model, and accounted for within the Available Land module. The model can be used flexibly to reflect the most up-to-date expert knowledge of local planners and others.

Land use data are contained in current FSUTMS, ZDATA1 and ZDATA2 files. In addition, the FSUTMS composite impedance matrices are used in calculating accessibility. (page 4-11)

The major drawback to using land use allocation models is the time needed to calibrate them. Because of the large number of variables, and the fact that land use models require calibration over two-base years, it usually takes a year or two to calibrate such a model, sometimes longer. In addition, generally only the model developers, a few consult-

Exhibit 2.3 (Continued)
Transit/Land Use Relationship Report

ants, and some local planners have the expertise necessary to calibrate a land use allocation model.

An important issue that is not dealt with well in land use allocation models is the effects of areas external to the model area. While this is a problem in transportation models, it is much more critical in land use models. (page 4-12)

This is particularly important in smaller areas located close to larger ones, such as Pembroke Pines, but could even be a major issue in large areas such as Miami. It is not well known how the various land use allocation modeling efforts have dealt with the issue of external areas.

Since most land use allocation modeling efforts in the U.S. are relatively recent, there is little information on the long-term accuracy of such models. It would be logical to assume that the models should be updated with more recent information as it becomes available. For example, a model first developed in 1990 whose first forecast years were 1993 and 2000 could be updated with observed 1993 data to revise the 2000 forecast. Is such an update valid without model recalibration? How often should a land use model be recalibrated? It is unclear what experience is available to answer such questions.

It must be recognized that regional forecasts are inputs to the land use allocation modeling process, and the results can be only as good as the regional inputs. Regional forecasts are not necessarily accurate, and can be a significant source of error.

Finally, there are no known studies that have determined whether land use allocation models produce significantly better results than do non-quantitative methods which are commonly employed in many urban areas. While most would argue that transportation accessibility is an important factor in locational decisions, it is unclear to what extent it is overlooked in manual forecasts.

There exists a good deed of ongoing research and progress in the area of land use allocation models. The U.S. Department of Transportation funds a Travel Model Improvement Program. (page 4-13)

Before Metro-Dade invests funds and manpower into the development of a land use allocation model, it is recommended that they spend some-time "plugged in" to the resources of this federally funded program.

Once the decisions have been made regarding when and what type of model to develop, several areas need to be addressed and assumptions need to be made prior to implementing a land use allocation model for Metro-Dade. These include: identifying corridors, identifying current land use, specifying test scenarios, determining future growth years, and determining regional growth rates. In addition, an assumption needs to be regarding a transportation network that includes existing plus committed projects for each model year. (page 4-14)

Given the long-range nature of long-range regional models, specific traffic engineering information (i.e., volume/capacity ratios by lane group and amount of delay) will not be available. In order to determine information that is stipulated for project-specific assessments (i.e., EIS, Master Plan Document, Future Land Map) further analyses will be required. (page 4-16)

Table 1-1
Observed Minimum Residential Thresholds for Promoting Transit Usage

Density	Public Transit
Single Family 2-4 DU/AC	Local bus service which depends on riders walking a maximum of 1,320 feet to nearest stop may not be economically feasible.
Single Family 4 DU/AC	Generally too low to support any transit except park-and-ride express buses to very large locations and/or employment centers.
Single Family 4-7 DU/AC 2400-3700/persons sq. mile	Threshold for local bus service to residential areas, generally one hour headway.
Medium Family Residential 7-15 DU/AC 5000-10,000/persons sq. mile	Can generally support local bus service. If density is maintained over a large enough area with good access, rail transit may be support. 7 DU/AC needed for 30 minute headway. 15 DU/AC needed for 10 minute headway.
Multi Family Residential 20-25 DU/AC	Threshold to support high capacity transit such as express bus and rail services, if location and access are good. Can be dependent on size of downtown (or employment destination) and the distance to it.
High Density Residential 25+ DU/AC	Can support all types of public transportation. At the home end, with levels of walk-in, auto- and feeder-bus-access experienced in other areas, residential densities to support fixed-guideway transit service must range from 43 DU/AC in the first 1/8 mile to 9.6 DU/AC in the next 1/8 mile. In the next 7/8 mile, the density should be at least 1.2 to 2.4 DU/AC, depending on various modes of transit usage.

Note: Under good conditions, 15 DU/AC can increase bus usage 100% over 5 DU/AC. At 30 DU/AC bus usage can triple; at 50 DU/AC bus trips can exceed auto trips.

Sources: *A Guide to Land Use and Public Transportation*, The Snohomish County, Washington, Transit Authority, 1989.
Guidelines for Transit-Sensitive Suburban Land Use Design. University of Wisconsin-Milwaukee (1991).
Research Triangle Region, *Transit/Land Use Study*, Barten-Aschman Assoc. Inc., with Hammer, Silen, George Assoc. (1990).
Managing Transportation in Your Community, N.J. Department of Transportation (1992).
The Regional Plan Association, *Where Transit Works: Urban Densities for Public Transportation*, Regional Plan News, August 1976. (page 1-9)

Table 1-2
Range of Density/Floor Area Ratios for Non-Residential Areas

Density/Floor Area	Public Transit
Low density 5 - 2.0 FAR*	Generates enough traffic to clog the roads but not enough ridership to sustain bus service. Can support car/van pool.
50 - 60 employees/acre	Threshold for employee-based local bus service with total employment base of 10,000 or more. FAR should exceed 2 to justify frequent service.
5 million sq. ft.	Minimal level of bus service (20 buses per direction/day or 1/2 hourly over 10 hours or hourly over 20 hours).
10 million sq. ft.	Intermediate level of bus service (40 buses per direction/per day or 1/2 hourly over 20 hours).
20 million sq. ft.	Frequent level of service (120 buses per direction/per day or a bus every 10 minutes).
83 - 167 employees per net acre	Major employment center can support fixed guideway station.

*Note: Floor Area Ratio (FAR) = $\frac{\text{total floor space}}{\text{total land acre}}$

Sources: *A Guide to Land Use and Public Transportation*, The Snohomish County, Washington, Transit Authority, 1989.
Guidelines for Transit-Sensitive Suburban Land Use Design. University of Wisconsin-Milwaukee (1991).
Research Triangle Region, *Transit/Land Use Study*, Barten-Aschman Assoc. Inc., with Hammer, Silen, George Assoc. (1990).
Managing Transportation in Your Community, N.J. Department of Transportation (1992).
The Regional Plan Association, *Where Transit Works: Urban Densities for Public Transportation*, Regional Plan News, August 1976. (page 1-10)

Exhibit 2.3 (Continued)
Transit/Land Use Relationship Report

Table 1-4
Possible Land Use Activities and the Corresponding Probability of Using Local Transit, High Capacity Transit, or Ride-Sharing Services

Activity Local Transit	Transit	High Capacity Services	Ride-Sharing
Commercial			
Hotels	√	√	n/a
Indoor Amusement	sometimes	sometimes	n/a
Movie Theaters	√	√	n/a
Restaurants	sometimes	sometimes	n/a
Neighborhood Shopping	√	sometimes	n/a
Centers	√	√	car/van pool
Community Shopping Centers	√	√	car/van pool
Regional Shopping Centers	sometimes	sometimes	n/a
Small Size Stores	sometimes	sometimes	n/a
Medium Size Stores	√	sometimes	n/a
Department Stores	√	sometimes	n/a
Convenience Stores	√	sometimes	n/a
Beauty & Personnel Services	√	sometimes	n/a
Gym & Health Clubs			
Residential			
0-4 Units/Acre	n/a	n/a	park-&-ride
4-7 Units/Acre	√	n/a	park-&-ride
7-15 Units/Acre	√	n/a	park-&-ride
15-24 Units/Acre	√	n/a	park-&-ride
Over 24 Units/Acre	√	√	park-&-ride
Institutional			
High Intensity Recreation	√	√	special events
Cultural Facilities	√	n/a	special events
Day Care Centers	√	n/a	park-&-ride
Parks	√	n/a	special events
Intermediate Schools	√	n/a	n/a
Secondary Schools	√	n/a	n/a
College	√	√	car/van pool
Religious Facilities	√	n/a	n/a
Correctional Facilities	√	n/a	car/van pool
Social Service Agencies	√	√	car/van pool
Governmental Agencies	√	√	car/van pool

	Local Transit Services	High Capacity Transit Services	Ride-Sharing Services
Note:	Local buses	Express buses	Car pools
√ = most compatible	Special Services	Rail transit	Van pools
n/a = not applicable	(for elderly & disabled and other special groups)	Passenger & auto ferries	Bus pools (subscription bus)

Source: *A Guide to Land Use and Public Transportation.* The Snohomish County, Washington, Transit Authority, 1989. (page 1-16)

Table 1-5
Walking Distance Guide for Locating Transit Stops

User	Walking Distance Under Normal Conditions
Mobility Impaired	Under 750 feet
Average Pedestrian	750 feet average
Average Commuter using Park-n-Ride Lot	500 - 1,000 feet from parking space to bus
Average High Capacity Transit Commuter	1,320 - 1,758 feet (1/4 - 1/3 mile) from parking space to rail station

Note: (1) The quality of the walk is as important as the distance. Distances will be reduced by steep grade, lack of weather protection, and lack of paved, hazard-free surface.
(2) Distances are measured by actual walking distance - put in a straight line.

Source: *A Guide to Land Use and Public Transportation, Volume I*, the Snohomish County, Washington, Transportation Authority (1989). (page 1-20)

Exhibit 2.3 (Continued)
Transit/Land Use Relationship Report

Table 4-1
Suitability of Land Use Model Formulations for Analysis of Different Policy Scenarios

Policy/Model	Southeast Florida	Lowry-Type	Putman-Type	Economic Equilibrium
Allowable densities	very suitable	very suitable	very suitable	somewhat suitable
Fixed caps	very suitable	very suitable	very suitable	somewhat suitable
Restricted activities	somewhat suitable	somewhat suitable	somewhat suitable	somewhat suitable
Different growth rates	somewhat suitable	very suitable	very suitable	somewhat suitable
Major development	somewhat suitable	very suitable	very suitable	somewhat suitable
Changed control totals	very suitable	somewhat suitable	somewhat suitable	somewhat suitable
Concurrency	somewhat suitable	somewhat suitable	very suitable	somewhat suitable
Vested rights	somewhat suitable	somewhat suitable	very suitable	somewhat suitable
Transit improvements	not suitable	not suitable	very suitable	somewhat suitable
Highway improvements	not suitable	not suitable	very suitable	somewhat suitable
Tax policies	not suitable	not suitable	not suitable	very suitable
Interest rates	not suitable	not suitable	not suitable	very suitable (page 4-7)

Exhibit 2.4
Town of Surfside
Transportation Element

As shown on Figure TR-1, the street system for the Town of Surfside is configured in a grid with most blocks 250-feet wide (east-west) and 660-feet long (north-south). Two State Highways run through the Town. State Road A1A runs north and south with Collins Avenue serving northbound traffic and Harding Avenue serving southbound traffic. On the northern boundary of the Town, 96th Street (State Road 922) runs east and west. It connects Surfside, Bal Harbour and Bay Harbor Islands with the mainland at NW 123rd Street in North Miami. One two-lane bridge within the Town connects the main portion of the Town with Biscaya Island. It is also important to mention Surfside Blvd. (91st Street) as a major roadway because it is the only way to enter Indian Creek.

Existing Conditions

Road classifications, based on the Florida Department of Transportation "Roadway Functional Classification System", are shown in Figure TR-1 and Table TR-1. Surfside has 2 arterials, 5 collector roads and 15 local roads. Collins and Harding Avenues are classified as State Principal Arterials and 96th Street is a State Minor Arterial.

Major accident locations, based on the Town's police accident reports, are shown in Table TR-2: The following locations have the greatest number of accidents:

Collins Avenue	and	95nd Street
Harding Avenue	and	94th Street
Harding Avenue	and	95th Street

Each of these locations is on an arterial street that is a State Highway.

Level of Service Definitions

The LOS measurement is the basis for setting the level of service standard which is used in the concurrency management system, the State-mandated system for assuring that the infrastructure network is adequate to serve additional development.

Levels of service are expressed as letters "A" through "F." The standardized descriptions of service levels used in transportation planning are as follows:

LOS A: Highest LOS which describes primarily free-flow traffic operations at average travel speeds. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at intersections is minimal.

LOS B: Represents reasonably unimpeded traffic flow operations at average travel speeds. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome. Drivers are not generally subjected to appreciable tensions.

LOS C: Represents stable traffic flow operations. However, ability to maneuver and change lanes may be more restricted than in LOS B, and longer queues and/or adverse signal coordination may contribute to lower average travel speeds. Motorists will experience an appreciable tension while driving.

LOS D: Borders on a range in which small increases in traffic flow may cause substantial increases in approach delay and, hence, decreases in speed. This may be due to adverse signal progression, inappropriate signal timing, high volumes or some combination of these.

LOS E: This represents traffic flow characterized by significant delays and lower operating speeds. Such operations are caused by some combination of adverse progression, high signal density, extensive queuing at critical intersections and inappropriate signal timing.

LOS F: This represents traffic flow characterized at extremely low speeds. Intersection congestion is likely at critical signalized locations, which high approach delays resulting. Adverse signal progression is frequently a contributor to this condition.

Methodology Used to Determine Roadway Characteristics

To determine the LOS for a particular roadway segment the following methodology was used:

The peak hour volumes for 1994 were collected from the Metro-Dade Planning Department which had counts for both county and state roadways. The 2015 projections were obtained in draft form from the Florida Department of Transportation.

The existing (1994) peak hour capacity analysis to determine the levels of service was computed by checking the existing peak hour volume against the 1991 Florida Department of Transportation's two-way peak hour capacity, based on the number of roadway lanes, number of traffic signals per mile, divided/undivided median and the existence of left turn bays. The resulting levels of service obtained from the FDOT table are shown in Table 2.3. The projections also reflect peak hour conditions. The Metro-Dade Proposed Traffic Circulation Element served as a verification of certain existing levels of service.

Existing Roadway Traffic and Levels of Service

Existing roadway peak hour traffic and Levels-of-Service (LOS) are indicated in Table TR-3. Both 96th Street and Harding Avenue are operating at LOS C, while Collins Avenue is operating at LOS 103 percent of E. A comparison of the existing and projected volumes show increases on Surfside's three major roadways.

Analysis of Existing Deficiencies

There are no arterial or other street expansions proposed for Surfside in the current Florida Department of Transportation "Five-year Transportation Plan" or in the current Dade County "Transportation Plan," yet roadway volumes are projected to increase substantially. It should be noted that the Town is not responsible for the principal cause of the problem which is continuing development in both the City of Miami downtown area and outer suburbs.

Mass Transit

As shown in Figure TR-2, Surfside receives considerable bus service from the Dade County Metropolitan Transit Authority. Six bus routes travel through the Town, primarily along the Collins/Harding Avenue corridor. With the exception of Route R, which travels along Dickens Avenue, all bus traffic is kept out of the single family areas. Routes are shown individually in Figures TR-2a to TR-2f.

Additionally, the Town of Surfside operates a 19-passenger mini-bus to provide an intra-city connector between the business district, recreational facilities and residences. The mini-bus operates between 8:30am and 3:30pm daily, with no service between 1:00pm and 2:00pm.
The only map of the mini-bus route is on the wall at the Town Hall and is unavailable for reproduction.

Adequacy of Existing Parking Facilities

Dade County's Zoning Ordinance uses the following parking standards:

Commercial space	1 space/300 square feet
Office space	1 space/400 square feet
Restaurants	1 space/50 square feet of seating area

It calculated that over 800 parking spaces are needed to serve Surfside's 223,000 square feet of commercial floor area. Since approximately 1,000 parking spaces currently exist, the standard is met. Therefore, the Town is capable of providing parking during the off season and the winter tourist season. Existing parking facilities are depicted in Figure TR-3. There is a need for more residential on-site parking on the south side of Town.

Future Traffic Circulation Map

Figure 4 in the Goals, Objectives and Policies component of this plan presents the Future Traffic Circulation Map, which envisions no major changes since none are required to serve projected development. The Level-of-Service figures in Table TR-3 document the adequacy of existing capacity.

No major changes are projected with regard to the Town's circulation system. This is due to the fact that the Town is nearly 100 percent developed. All existing street rights-of-way are lined with existing structures and as such only improvements within these existing rights-of-way are economically practical.

The Town is concerned with maintaining a development level which will not adversely impact the

ability of AIA to handle required traffic demands within its existing rights-of-way.

TRANSPORTATION ELEMENT GOAL: ***Provide a transportation system that meets the needs of the Town of Surfside and the larger community of which Surfside is a part with minimal negative impact on the quality of life for Surfside residents and businesses.***

TRAFFIC CIRCULATION OBJECTIVES and POLICIES

Objective 1, Motorized and non-motorized transportation system: In general, provide for a safe, convenient, and efficient motorized and non-motorized transportation system. In particular, achieve acceptable level of services for roads and attractive and convenient bicycle and pedestrian facilities. This objective shall be made measurable by its implementing policies. [9J-5.007 (3) (b) 1]

Policy 1.1: The Town shall regulate the timing of development to maintain at least the following peak hour Level of Service standards on roadways that lie within its municipal boundaries: [9J-5.007 (3) (c) 1]

Local Roads:	C
Collector roads:	C
Arterial roads:	D

Policy 1.2: The Town shall evaluate the desirability of adopting the following peak hour level of service standards: [9J-5.007 (3) (c) 1]

Where extraordinary transit service such as commuter rail or express bus service exists, parallel roadways within 1/2 mile shall operate at no greater than 150 percent of their capacity.

Where mass transit service having headways of 20 minutes or less is provided within 1/2 mile distance, roadways shall operate at no greater than 120 percent of their capacity.

Where no public mass transit service exists, roadways shall operate at or above LOS E, in STA's 20 percent of non-State roads may operate below E.

Policy 1.3: The Town shall review all proposed developments and issue development orders only when it finds that a proposed development will not cause roadway levels of service to fall below the above standards or cause further degradation of service if conditions at the time of the review indicate that standards are already below the above standards.

Policy 1.4: As a condition for development approval, the Town may require that proposed new developments provide roadway improvements necessary to meet the level-of-service standards established above.

Policy 1.5: The town shall utilize State Gas Tax funds for a roadway repaving and reconstruction program and other transportation activities. Among the items which are specifically authorized and encouraged by this policy are the following: sidewalk repair and replacement; public transportation operations and maintenance; roadway and right-of-way maintenance and equipment; roadway and right-of-way drainage improvements; street lighting, traffic signs, traffic engineering, signalization, and pavement markings; bridge maintenance and operations; and debt service and current expenditures for transportation capital projects in each and all of the foregoing program areas. Other capital expenditures in related and different projects are hereby authorized.

Policy 1.6: The Town shall enact and enforce land development code standards and a review process to control roadway access points, on-site traffic flow and on-site parking. The land development code will require the use of joint access drives for adjacent uses. It will also set minimum design standards for: 1) the spacing and design of driveway curb cuts; 2) the size of ingress and egress lanes for major land uses; 3) the spacing and design of median openings; and 4) the provision of service roads. State highway access management standards will be utilized in developing roadway access point controls, particularly on State Road A1A. The access management controls will be tailored to achieve the ends set forth in Objective 1. [9J-5.007 (3) (c) 2]

Policy 1.7: The Town shall seek quick action by Dade County to replace missing road signs and repair malfunctioning traffic signals.

Policy 1.8: The Town shall continue a program to trim or remove roadside shrubbery which blocks visibility at intersections.

Policy 1.9: The Town shall maintain safe, handicapped-accessible walkways along heavily traveled roadways.

Policy 1.10: The Town shall evaluate the feasibility of developing bicycle routes, lanes and/or paths for recreation and transportation purposes. [9J-5.007 (3) (c) 5]

Policy 1.11: On-site circulation and parking requirements shall be designed to ensure large circulation isles, turning radii and parking spaces. On-site traffic flow and on-site parking standards will be designed to encourage high levels of pedestrian and bicycle use, including requiring bike racks under certain conditions. Pedestrian access ways will be required through large parking lots to connect building areas to public sidewalks. Bicycle parking racks shall be required for large scale uses. Parking regulations will establish the minimum number of parking spaces which will be required to serve uses; minimums will be based on intensity measures such as building square feet. Parking regulations will establish appropriate minimum sizes for circulation isles, parking stalls and parking stall angles. General standards will provide for review of parking lot layout in order to ensure that the layout will be safe. *The minimum number of parking spaces required for multifamily residential uses shall be increased from the current one space per residential unit, which is hereby determined to be inadequate for and incompatible with the quality and character of new multifamily residential development desired for the Town.* [9J-5.007 (3) (c) 3]

Policy 1.12: The Town shall coordinate with the MPO plans to improve major arterials. [Scriveners note: Section 9J-5.007 (3) (b) 3 requires an objective which provides for the coordination described in this policy. Since coordination is an action, it seems appropriate that it be expressed in terms of a policy.] [9J-5.007 (3) (b) 3]

Policy 1.13: The Town shall evaluate the utility of employing Transportation Concurrency Management Areas and/or Transportation Concurrency Exception Areas in the concurrency management process. Transportation Concurrency Management Areas are authorized in 9J-5.0055 (5) and Transportation Concurrency Management Exception Areas are authorized in 9J-5.0055 (6).

Objective 2, Coordination of traffic circulation with land use: In general, coordinate the traffic circulation system with land uses shown on the future land use map. In particular, provide the traffic circulation system which is shown on the Future Traffic Circulation Map. This objective shall be made measurable by its implementing policies. [9J-5.007 (3) (b) 2]

Policy 2.1: The Town shall approve no alteration in the existing traffic circulation system which materially reduces the continuity and rights-of-way of arterials or collectors shown on the Future Traffic Circulation Map. [Scriveners note: The Future Land Use Map and the Future Traffic Circulation Map both describe conditions almost identical to those which exist today. They are adequately coordinated as evidenced that the existing land uses and the existing traffic system function adequately.]

Policy 2.2: The Town shall consider alterations in traffic flow which serve to reduce non local traffic through residential areas.

Objective 3, Coordination with the MPO: In general, coordinate with the plans and programs of the Metropolitan Planning Organization. [9J-5.007 (3) (b) 3]

Policy 3.1: The Town staff shall annually review and evaluate the Florida Department of Transportation 5-Year Transportation Plan, the Dade County Transportation Improvement Program and the traffic circulation plans and programs of Miami Beach and Bal Harbor to determine if plans and programs contained therein necessitate any revision to this or other elements of this Comprehensive Plan.

Policy 3.2: Appropriate Town staff shall attend selected meetings of Metropolitan Planning Organization and related *ad hoc* committees pertaining to traffic and transportation issues affecting the Town.

Policy 3.3: The Town shall revise this Traffic Circulation Element as necessary in response to the above.

Policy 3.4: The Town shall include statements of findings in support of all modifications to this Transportation Element.

Objective 4, Coordination with transit authority: In general, coordinate with the plans and programs of the Metropolitan Dade County Transit Authority. This objective shall be made measurable by its implementing policy. [9J-5.007 (3) (b) 3]

Policy 4.1: Appropriate Town staff shall attend selected meetings of Metropolitan Dade County Transit Authority pertaining to levels of service for buses and other transit.

Objective 5, Right-of-way protection: In general, protect existing rights-of-way and future rights of-way from building encroachment. In particular, achieve zero net loss of right-of-way from building encroachment throughout the period during which this plan is in effect. [9J-5.007 (3) (b) 4]

Policy 5.1: The Town shall use the land development code as enacted, the land development code enforcement procedures and the building code enforcement procedures to protect existing rights-of-way through setback requirements which prohibit right-of-way encroachments of any kind. [9J-5.007 (3) (c) 4]

Objective 6, The Town shall help provide an adequate supply of parking to serve the business area and major community facilities. Achievement of this objective shall be quantified by the implementation of the following policy:

Policy 6.1: The Town shall undertake a program to upgrade its parking facilities which shall include removal of the existing concrete walls and use of landscape treatments similar to those used in the Town's Abbott Avenue Parking Lot.

Exhibit 2.5
The Competitive Future of Urban Passenger Transport
Paper Presented by Wendell Cox & Jean Love to the Third International Conference on Competition and Ownership in Public Transport, Toronto, Ontario, September 1993

Introduction

Throughout the developed world, urban passenger transport continues to lose market share to the automobile despite its potential to reduce air pollution, energy use, and traffic congestion by attracting ridership from the automobile.

This paper examines the factors behind passenger transport's continuing decline and concludes that a contributing cause is that market discipline is largely inoperative. Unless and until passenger transport systems are subject to competitive market disciplines, their relative decline can be expected to continue.

Public Transport Market Share is Declining

From 1970 to 1990, the percentage of people riding passenger transport to work (work trip market share) declined by 42 percent in the US. During the 1980s, automobiles accounted for virtually all of the increase in work trip travel. In 1990, 18 million more people traveled to work by car than in 1980 – the 10 years' *growth* in automobile commuting was more than three times the *total* number of people commuting by passenger transport in 1990. During the 1980s, transport's work trip market share declined 17 percent nationally, from 6.2 percent to 5.1 percent,(1) and rose in just two of the 39 metropolitan areas of more than one million people. (See Table 1.)(2)

Even the construction of new rail lines and extensions have not reversed the decline. No US metropolitan area that built or expanded urban rail systems in the 1980s experienced an increase in passenger transport's market share. Passenger transport's work trip market share decreased 33 percent in Portland despite the opening of a new light rail line. Passenger transport's work trip market share in Atlanta declined 36 percent despite an expansion of the heavy rail system.(3)

Ridership has continued its decline since 1990. In 1991, the number of trips taken on public transport dropped to below 1970 levels(4) despite a 23 percent increase in population and a 50 percent growth in employment. Preliminary data for 1992 indicates a further 1.3 percent decline.(5) Total US ridership is less than half that of metropolitan Tokyo (which has one-tenth the total population of the US).(6)

Similar trends are occurring throughout the developed world. Reflecting improved affluence, automobile usage is rising in Europe and other developed areas at a greater rate than in the United States.(7)

In western Europe, per capita passenger transport ridership is declining in most urban areas;(8)

Ridership is declining in Australia and New Zealand;(9) and,

From 1984 to 1990, passenger transport market share decreased for two-thirds of the large Canadian passenger transport systems.(10) Even Vancouver, BC, with one of North America's most successful new rail systems, experienced a decline in market share, prompting public officials to question the wisdom of the original decision to build rail.(11)

Causes of the Decline

Much of the decline in passenger transport ridership is the result of growing affluence and changes in demographics, but the decline is exacerbated by three factors:

Ineffective Marketing: Services have not been tailored to changing markets.

Escalating Unit Costs: Operating costs have escalated above market rates.

Wasteful Investments (Especially Rail): Excessively costly public transport infrastructure projects have been built.

Ineffective Marketing: Urban transport markets have changed radically. Among developed nations, urban population densities have declined markedly, and work trips are more dispersed than in the past. These trends are most pronounced in America but have advanced considerably in other nations as well.

For decades, Americans have moved from the densely settled cities to more spacious suburbs.(12) This trend -- most apparent since World War II -- actually began in the early 1800s and created a distinctly American lifestyle(13) based upon detached single-family houses with front lawns and back yards.

The conventional forms of passenger transport -- high capacity rail systems and large buses -- are at a particular disadvantage in serving the more decentralized travel markets that have emerged. Yet, public transport authorities have generally failed to design services for these emerging market.

Conventional passenger transport services are most effective in serving urban cores (central cities) and central business districts (CBD). But these markets are of declining relevance.

By 1980, the CBD share of employment averaged only seven percent for the ten largest US urban areas. The nation's strongest CBD -- New York -- accounts for only eight percent of metropolitan employment. In Los Angeles, the CBD represents only three percent.(14) And the downward trend has continued. By 1990, more than 60 percent of US employment and two-thirds of US office space was in suburban areas.(15)

Today, just one-quarter of the American people live in central cities, and the largest portion of people -- half the population -- lives outside the central city.(16) Moreover, the suburbanization of both residences and businesses is expected to continue.(17) The trend toward ever-declining population densities(18) -- the number of people per square mile -- is continuing in the traditional suburban areas as well as in the cities. From 1950 to 1990, average densities for the central cities of the nation's 25 largest urbanized areas(19) declined 42 percent.(20) Population densities of the suburban areas that surround these cities declined by 24 percent.(21) And average densities for the entire urbanized areas declined 46 percent.(22)

As traditional passenger transport markets shrink, passenger transport's market share shrinks as well.

Why has passenger transport failed to provide services for the emerging market segments? Public choice economics may provide the answer -- that the incentive structure is wrong. In the competitive market, firms have to provide customers with the products they desire, or they go out of business (this is "consumer sovereignty"). In non-competitive environments, such as the public sector, no such customer-producer nexus exists. As a result, non-competitive environments tend to exhibit "producer sovereignty," a situation in which organizations produce those products they, rather than customers, choose. Passenger transport tends to exhibit the characteristics of producer sovereignty.

Escalating Unit Costs: Another factor that has contributed to passenger transport's market share loss is escalating unit costs (costs per mile of service), which have consumed funding that otherwise could have been used to expand passenger transport service.

From 1970 to 1991, US urban passenger transport costs escalated more than 60 percent ahead of inflation, while costs per passenger have more than doubled in real terms.(23) The extent of this escalation is illustrated by a comparison to medical care. (See Figure 1.) Since 1970, passenger transport expenditures have increased relative to the Gross Domestic Product at *approximately the same rate* as medical care expenditures.(24) Further, *passenger transport unit costs rose 10 percent more than those of medical care* from 1970 to 1990.(25)

Passenger transport's unit cost performance has deteriorated substantially in the last two decades -- real costs per mile have increased at more than double the rate of the previous 20 years. Compared to competitive industries, passenger transport cost increases have been even more substantial. Since 1970, when public and private costs were similar, public passenger transport costs per mile increased 88 percent compared to competitive bus industry costs per mile -- an annual productivity loss of 3.2 percent.(26) (See Figure 2.) Competitive bus industry costs have declined 0.7 percent annually since 1970, and 2.3 percent annually since deregulation in the early 1980s (inflation adjusted). Moreover, passenger transport productivity has declined sharply, while productivity in other transportation industries has improved. (See Figure 3.)

Passenger transport costs have risen so substantially that the cost of moving a passenger one mile is now nearly three times that of the automobile. (See Table 2). Despite perceived cost advantages, *public passenger transport as it is produced in the US is much more costly than travel by automobile.*(27)

Passenger transport unit costs have escalated around the world.

In Canada, passenger transport costs per mile rose 36 percent from 1970 to 1990, an annual rate of 1.8 percent (inflation adjusted).(28)

From 1970 to 1983, London Transport (LT) bus costs escalated at nearly twice the rate of inflation.(29)

Unit cost escalation has also occurred in western Europe, Australia, and New Zealand.

Revenues are less dear in the public sector. Indeed, there is evidence that the greater the amount of public revenue available to passenger transport, the greater the unit cost escalation.(30) (See Table 3.) An analysis of the 166 public transit agencies (accounting for 93 percent of US transit costs) from 1979 to 1990 showed that the largest increase in unit costs reflected the largest increases in funding:(31)

> The 20 percent of transit agencies that received the largest funding increases also increased their unit costs 48 percent on average after adjusting for inflation.
>
> The second quintile (based on funding increases) had an average unit cost increase of 30 percent (inflation adjusted).
>
> The third quintile had an average inflation-adjusted unit cost increase of 19 percent.
>
> The fourth and bottom quintiles -- those that received the smallest amount of new funding -- had average unit cost increases of 10 percent (inflation adjusted), and 21 of the 26 transit agencies where unit costs actually decreased were in the fourth and bottom quintiles.

Experience has been similar in Canada. (See Table 4.) Again, the cause of the cost escalation can be explained by the incentive structure. In the competitive market, firms seek to maximize the revenue to unit cost ratio to obtain the greatest return on investment. In non-competitive environments, such as the public sector, there is no profit motive, and therefore no incentive to maximize the revenue to unit cost ratio.

Wasteful Investments (Especially Rail)

Further, passenger transport often has chosen to develop rail systems that have proven to be both inefficient and ineffective.(32) During the 1980s, more than $20 billion was spent to build and expand urban rail systems in 14 US cities. Yet, passenger transport work trip market share declined in all but one of the cities where it remained stable.(33) Even Washington, DC, which has the nation's most expensive new rail system, anticipates a continuing decline in market share.(34) Urban rail has failed to achieve its public objectives -- it has had little overall impact on travel patterns. A US Department of Transportation study documents that new urban rail systems have generally cost more than anticipated to build, cost more than anticipated to operate, and carried far fewer riders than planned.(35) The same study estimated the cost of each new rider attracted to a rail system ranged from $4,800 to $17,700 annually:

> The annual cost of each new rider on Atlanta's rapid rail system was over $15,000.(36)
>
> Per passenger costs on Los Angeles' new commuter rail system have been projected as high as $25,000 annually (the cost per new passenger transport passenger would be higher).(37)
>
> John Kain of Harvard University has estimated that the annual cost per new passenger transport passenger on the proposed Dallas rail system would be more than $45,000.(38)

The planning processes that have justified rail systems have often failed to consider quality alternatives. They have routinely discounted the potential of bus alternatives, usually by understating capacities.

Again, the problem may be the result of a dysfunctional incentive structure. Passenger transport authorities do not face market disciplines that would require objective analysis of investments and selection based upon a credible cost-benefit analysis. The situation is exacerbated where capital funding is obtained from remote (non-local) government sources. This has become an embarrassment in the US, where urban rail systems have become a primary mechanism for the distribution

Exhibit 2.5 (Continued)
The Competitive Future of Urban Passenger Transport

of political largesse ("pork") by powerful members of the US Congress. The incentive structure encourages passenger transport authorities to design costly and highly visible projects that are more readily marketable in the political setting.

Passenger transport's continuing decline can be attributed in part to insulation from market forces. Passenger transport marketing is ineffective because there is no incentive to be effective. Passenger transport costs escalate, because there is no incentive to be cost effective. Passenger transport makes wasteful investments, because there is no incentive to make effective investments.

Passenger Transport and Customers

Passenger transport can increase its market share only by attracting customers. To attract customers, passenger transport must understand what the potential customers of passenger transport -- the automobile drivers -- want.

Proximity: Customers want service that is conveniently close to both their trip origin and destination.

Frequency of Service: Customers want to have the ability to travel whenever they like. That means that service must be frequent, and it must be available virtually all day.

Speed: Customers want to get where they are going as quickly as possible.

It is important to understand that passenger transport can reduce air pollution and traffic congestion only if it entices ***automobile drivers to switch to passenger transport.*** Mere diversion from automobiles is not enough. Attracting an automobile passenger from a car pool without removing the automobile from the road accomplishes nothing. With respect to reducing air pollution and traffic congestion, ***the test of passenger transport policy is not how many people are riding passenger transport, it is how many automobiles passenger transport removes from the road.***

To serve customers, passenger transport must provide the services that customers want and provide them for no more than the market rate. That requires, at a minimum, incorporating the incentives of the competitive market by which the effectiveness of financial resources are maximized.

Market Strategies

A number of strategies exist for subjecting passenger transport services to market discipline:

- Competitive tendering.
- Entrepreneurial (or commercial) services
- Independent review of major capital projects
- Non-dedication of funding
- Separation of policy from operations

Competitive Tendering

Competitive tendering is the provision of a public service through a competitively awarded contract. Competitive tendering is a synthesis of public and private roles. The public sector decides what services should be competitively tendered and what specifications should apply to the service. The competitive market responds to the invitation of the government, and one or more producer is selected to provide a specific service for a period of time. The public sector retains policy control over the service, while the competitive market produces the service under public scrutiny. Competitive tendering is being used around the world for a variety of public services including public passenger transport.(39)

Competitive tendering has been primarily applied to bus services, but has been used for rail services in the US and Sweden. Moreover, a form of competitive tendering is likely to emerge from the privatization of British Rail. Further, competitive tendering could have a "spill-over" effect upon unit costs of rail systems. Where a routine conversion to competitive tendering is underway, rail costs have declined relative to the market (London and San Diego). This may be due to the radically different public management and policy culture that develops in a competitive environment.

Overview of the US Experience

Competitive tendering has been slowly adopted by passenger transport authorities in the United States.(40) By 1991, approximately 10 percent of US passenger transport bus service was competitively tendered. (See Table 5.) The costs of the competitively tendered services were considerably less than those of services provided directly by public transport authorities. (See Figure 4.) Competitive services are the most cost effective of US passenger transport services. (See Table 6.)

The five most cost effective US systems are either competitively tendered or commercial (entrepreneurial).

Eighty of the top 10 systems are either competitively tendered or commercial.

The most cost effective system is approximately one-third less costly than the most cost effective light-rail system, 50 percent less costly than the lowest cost commuter rail system; 60 percent less costly than the lowest cost metro system; and 60 percent less costly than the lowest cost non-competitive bus system.

An analysis of 17 urban areas with representative competitive services indicates that, on average, competitive services are: (See Table 7.)

> Nearly 60 percent less costly than non-competitive bus services.
>
> Nearly 50 percent less costly than urban rail (light rail and metro) systems.
>
> 35 percent less costly than commuter rail services.

As the use of competitive tendering has increased, competition per bid package has also increased. Based on a 1992 survey of 78 US passenger transport competitive tendering, fewer than two proposals were received, on average, per round of competitive bidding (request for proposal) before 1985. In 1991-1992, nearly five proposals were received on average. (See Figure 4.)(41)

The survey also found the size of a competitive package and the availability of publicly-owned buses for leasing have an important impact on the extent of competition. Competition is greatest for packages involving fewer than 50 buses. For larger packages (over 50 buses), the competition is very limited where proposers are required to supply buses. These findings indicate that the many small transportation businesses are better able to compete for smaller packages. (See Tables 8 and 9.)

San Diego: San Diego separates policy from operations, and the passenger transport policy agency facilitates, rather than operates, service. All services are provided by public and private operating companies. The Metropolitan Transit Development Board (MTDB) -- the policy board -- fulfills the role of catalyst; it supervises the Metropolitan Transit System and sets a unified fare, transfer policy, route structure, and common logo for public and private carriers. Like London Transport, San Diego has a routine program for injecting competition into its system:

> *Constructive competition for provision of services will be encouraged. An annual review of ...(non-competitive)... services for potential contract award will be included in the ... plan development process.*(42)

Bus system costs per mile in San Diego declined more than 20 percent from 1979 to 1993 after adjusting for inflation -- an annual productivity improvement of 1.6 percent.(43) This cost reduction can be traced to the use of competitively tendered services operated by private carriers.

San Diego has converted to competitive tendering of bus service with more than 30 percent of bus service tendered. San Diego converted to competitive tendering at less than half the annual rate of employee turnover (or the natural attrition rate), and there have been no employee layoffs. (The avoidance of employee layoffs is a MTDB policy.)

Competition has reduced the cost increase rate of the public passenger transport agency, San Diego Transit, to nearer that of the competitive market.

Competitive services in San Diego average 48 percent less per mile than non-competitive services (non-competitive services are 95 percent more expensive).(44)

The percentage of operating expenses covered by fares rose from 31 percent in 1979 to 53 percent in 1990.(45)

Coincidentally, San Diego has also developed a model rail system with a cost per passenger mile that is 40 percent less than the next most efficient light rail system in the United States.(46) Overall, San Diego's passenger transport ridership has increased nearly 80 percent since 1975. Despite the diversion of substantial ridership from buses to light rail, bus ridership is up more than 25 percent. Compared to the national passenger transport industry cost increase rate, San Diego has saved more than $200 million -- enough to operate its bus services for three years.

San Diego also provides an example of successful public agency competition against private firms. In 1993, publicly owned San Diego Transit was awarded a tender to operate the City of Chula Vista passenger transport system for $1.89 per mile, at least 55 percent less than its system wide costs per mile. In response to private sector competition, San Diego Transit has reduced clerical and maintenance staff and obtained an arrangement with the Amalgamated Transit Union that permits it to pay market rate wages and benefits for the tendered service. The second lowest bid, submitted by a private carrier was $1.92 per mile. Local private bus companies have challenged the San Diego Transit bid, suggesting that the $1.89 figure does not include all attributable costs. Nonetheless, the case illustrates the potential for cost savings from competitive tendering of public passenger transport service. If San Diego Transit were to provide all of its services at competitive market rates -- those charged to the city of Chula Vista -- an additional $30 million would be available -- enough to nearly double bus service in San Diego.(47)

Los Angeles: Los Angeles competitively tendered passenger transport routes that were threatened with cancellation as a result of financial constraints. The routes were competitively tendered by the city of Los Angeles and the county of Los Angeles in 1987 under the supervision of the Los Angeles County Transportation Commission. Ridership on the tendered routes increased 150 percent, while overall passenger transport ridership declined in the Los Angeles area.(48) In an independent audit, Price Waterhouse reported:

Unit cost savings of 60 percent savings (public costs were 150 percent higher than competitive costs).(49) Savings on some routes were found to be 69 percent, which is unprecedented in passenger transport tendering.

An improvement in service reliability of over 300 percent, a 75 percent reduction in passenger complaints, and virtually the same safety performance relative to the region's large public passenger transport agency.

Part of the lower operating costs has been passed on to customers in the form of lower fares.

More than 10 percent of Los Angeles passenger transport services are now competitively tendered.

Denver: In 1988, Colorado enacted legislation requiring Denver's public passenger transport system, the Regional Transportation District (RTD), to competitively tender 20 percent of its bus service. The private providers have produced quality service, prompting KPMG Peat Marwick to note: "No relationship was found between safety and quality of service and higher bus operator turnover. In most measures, the tenderers performed as well or better than RTD despite lower wages."(50) KPMG Peat Marwick's second annual performance audit reported cost savings of 31 percent (public costs are 45 percent higher than competitive costs).(51) Excluding ancillary passenger transport costs of superfluous facilities and redundant staff,(52) savings are 39 percent. Savings over a five year period are projected at nearly $30 million, even after including more than $8 million in labor redundancy payments to public bus drivers to avoid layoffs.(53) RTD has expanded the use of tendered services beyond that required by the legislation and has recently awarded tenders for another five years.

Dallas: The Dallas Area Rapid Transit Authority greatly expanded passenger transport services through competitive tendering. More than 200 buses are operated under contract. Express and suburban services are provided -- types of services that are especially expensive to operate. Nonetheless, savings are being achieved, and these services have increased Dallas passenger transport ridership.(54)

Austin: Austin's Capital Metropolitan Transit District (Capital Metro) provides more than 40 percent of its bus service through competitive tendering. Express routes and University of Texas routes are competitively tendered. Costs per service hour are 44 percent less among the tendered services. Costs per passenger mile are 60 percent

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less and are approximately 20 percent below the cost per passenger mile of the nation's most efficient public bus system.(55)

Atlanta: Cobb County, in the Atlanta area, used competitive tendering to establish its new passenger transport system. Operating costs per hour are 28 percent below those of non-competitive services.(56) In its second year of operation, ridership increased by nearly 40 percent, while overall passenger transport ridership dropped in the Atlanta area.

Fairfax County, Virginia: Escalating passenger transport costs induced Fairfax County (in the Washington, DC area) to convert its bus system to competitive tendering. The county estimated that its cost savings were 39 percent, and the system has been expanded since its establishment in 1986.(57)

US Specialized passenger transport services: Passenger transport's most rapidly expanding market segment is specialized services for the disabled and the elderly. These services usually provide door to door service ("dial-a-ride" services) and are usually operated with small buses or taxicabs. Nearly 70 percent of specialized services for senior citizens and the disabled is operated under competitive tender.(58)

London: London Transport (LT) has the most comprehensive program of competitive tendering in the world.

LT's policy is to [competitively] tender for the provision of goods and services where similar or greater efficiency can be obtained at lower cost without compromising safety. Internal departments, in some cases, are allowed to bid for this work.(59)

LT's competitive service system is larger than most complete passenger transport systems; it uses 30 companies to operate more than 270 routes while retaining service and fare coordination:

More than 2,400 buses are competitively tendered -- 50 percent of London Transport bus service. London operates more buses by competitive tender than are operated by all US public agencies except New York.(60)

Overall, London Transport's bus costs per mile have *declined* 34 percent (inflation adjusted) since competitive tendering began in 1984 -- an annual productivity improvement rate of 4.5 percent. In the year ended March 31, 1993, bus costs were US$500 million less than they would have been if costs had risen with inflation. Since 1984, US$2.4 billion has been saved relative to inflation.

The former public monopoly (London Buses, Ltd.) has improved its cost performance by 32 percent -- an annual productivity improvement rate of 4.3 percent. As a result London Buses has won approximately 60 percent of the services opened to competitive tendering.

Competitively tendered services carry 500 million passengers. Among North American bus systems, only New York carries more passengers. London's competitively tendered services carry more passengers than all of the bus and urban rail services in Chicago, Los Angeles, Philadelphia, Washington (DC), and Boston.

Service quality has improved, even where the former public monopoly is awarded service it previously operated non-competitively. The tendered services division has *achieved London Transport's best operating performance*.(61)

Subsidies declined from 55 percent of operating costs to 15 percent, while service levels were increased 20 percent. By comparison, public passenger transport bus systems in New York, San Francisco and Boston carry more passengers per mile but require operating subsidies of more than 50 percent.(62)

Canada: Competitive tendering has been somewhat limited in Canada:

Suburban services have been competitively tendered in the Montreal area for nearly 10 years. At least 100 buses are competitively tendered.

Smaller community services are competitively tendered in British Columbia, Saskatchewan, Ontario, and Quebec.

Suburban systems are competitively tendered in the Toronto area. Mississauga Transit (Toronto area) competitively tendered a single route at savings of more than 20 percent compared to the internal cost of operation.(63)

Copenhagen: The Danish parliament enacted mandatory competitive tendering legislation for Copenhagen public passenger transport bus services (45 percent by 1994), and a 100 percent mandate is under consideration. More than 30 percent of services are now competitively tendered, and savings are estimated at 10 to 15 percent. In addition, the passenger transport agency credits competitive tendering with reversing its downward trend in ridership.(64)

Sweden: In 1989, parliament passed legislation to encourage competitive tendering. In Stockholm, 20 percent of bus service has been opened to competitive tendering and some commuter rail service. Cost savings have been nearly 20 percent. In Göteborg (Gothenburg), competitive tendering reduced costs per mile by nearly half from 1989 to 1993.(65)

New Zealand: A 1990 act of Parliament required that all public passenger transport services be provided commercially or through a "competitive pricing procedure." Christchurch reduced its system-wide costs by 32 percent in the initial round of tenders. Competitive tendering of all dedicated school bus service is also required.(66)

Other Nations: As the passenger transport financial situation continues to deteriorate, other nations are implementing or considering conversion to competitive tendering, including the Netherlands, Finland, Norway and elsewhere.(67)

Commercial Services

Changing urban markets can be served by allowing commercial operators to produce services. In some cases, passenger transport services can be operated commercially (without subsidy) by private providers. These commercial services can serve new markets, replace more expensive subsidized passenger transport services, supplement existing services, or fill service needs that cannot be filled by publicly subsidized passenger transport services.

South Africa: Black-owned minibuses ("kombi-taxis") provide commercial services to 42 percent of Black commuters in South Africa. Approximately 105,000 minibuses with capacities of from 15 to 19 people provide service in major metropolitan areas.(68) By comparison, the total number of passenger transport buses operating in the United States is approximately 40,000. The minibus industry not only provides essential mobility without public subsidy, but also provides business opportunities for Black entrepreneurs. Owners have expanded the size of their fleets and have diversified into other commercial ventures.

Miami: A US Department of Transportation study(69) conservatively estimated that 400 private unsubsidized vans (jitneys) in Miami carry as many as 49,000 riders per weekday -- approximately the same number of riders are carried by Miami's billion dollar heavy rail system. The jitneys operate over high-volume streets in competition with public passenger transport service. Yet, less than one-quarter of their ridership has been diverted from the public system. Ridership surveys found 78 percent of van riders were workers with annual incomes less than $25,000 a year, and 53 percent of riders were non-English speaking. The jitneys have increased net passenger transport ridership in Miami by an estimated 13 percent -- and at no cost to taxpayers.(70) Most riders choose the jitneys because they provide faster trips than the public buses. Most Miami jitney companies are minority owned. The passenger transport authority has attempted to eliminate jitney competition through regulatory and legal strategies and by lowering fares on the public routes that compete with the vans.

New York City: The largest US commercial system -- estimated at 2,400 private vans -- operates in New York City.(71) Passengers have been attracted by more direct and frequent services.(72) As in Miami, many of the vans are minority owned, and passenger transport authorities have attempted to eliminate competition from the vans using regulatory and legal strategies and lower fares on the competitive routes. Yet the vans continue to prosper. A New York van operator explained what the passenger transport agency would have to do to win back passengers: "Easy. Just give them faster and better service."(73) There have, however, been problems with the vans. Some are not licensed, and some do not meet insurance requirements.

New Jersey: New Jersey Transit oversees a large network of commercially operated services and provides some capital assistance. Private companies operate more than 1,000 buses. These services carry more than 55 million annual passengers and provide 750 million passenger miles. The New Jersey commercial operators represent the nation's fifth largest bus system (in terms of passenger miles). Unlike other major US public passenger transport systems, the New Jersey private companies receive *virtually no operating subsidies*.(74)

Other International Examples: The overwhelming majority of bus service in Japan, Hong Kong, Taiwan, and Singapore is unsubsidized. The Hong Kong and Singapore subways are privately operated and earn a profit. Most urban rail service in Japan is privately operated and profitable.(75) Most less developed nations that were not previously communist rely on non-subsidized privately operated passenger transport systems, often utilizing small buses and vans.(76)

Competitive Rapid Transit

Rapid passenger transport is not confined to rail systems. Competitively operated bus services are not only cost effective, competitively operated express buses operate at speeds equal or superior to rail passenger transport and represent the least costly rapid passenger transport alternative, both in terms of capital costs and operating subsidies.(77) (See Table 10.) Moreover, busways can handle the passenger loads required in all but a few rail corridors.

In some cases, express buses operate in mixed traffic on motorways, and in other cases they operate on busways and high-occupancy vehicle (HOV) lanes available to buses and car pools.(78) Even where dedicated busways are constructed, competitive express bus services are far less costly than rail services. A recent US Department of Transportation study showed that the capital costs per passenger of such facilities are one-fifth that of rail systems.(79) Moreover, HOV lanes are flexible. They make rapid passenger transport service through car pools available to the new dominant non-downtown employment locations, while reducing traffic congestion. Further, competitive rapid passenger transport can be operated on regional streets through mechanisms such as "red routes," bus priority lanes, and exclusive express bus lanes such as the "key routes" on the streets of Nagoya, Japan. Examples of competitive rapid passenger transport follow.

Brazil: Urban areas in Brazil have been leaders competitive rapid passenger transport. Curitaba has developed a busway that carries more than 300,000 riders per day. At peak hour, Curitaba's busway carries more riders (nearly 20,000) than any rail line in the US outside New York City.(80) A busway in Porto Allegre equals Curitaba's peak hour volumes. Sao Paulo is achieving peak hour volumes of 30,000 by providing a central passing lane at stations.(81)

Johannesburg: Johannesburg has built an exclusive busway for buses and minibuses between the downtown area and the nation's largest black township, Soweto (with an estimated population of 2 to 3 million). This facility has improved travel time and made Black-owned commercial minibus services more attractive to customers. In addition, the city has constructed two major downtown terminals to handle the large volume of minibuses entering the area.

Ottawa: Canada's capital also demonstrates the potential for competitive rapid passenger transport. Ottawa's busway is among North America's most successful new rapid passenger transport systems, carrying 200,000 riders daily, and nearly 10,000 per peak hour in the peak direction.(82) Ottawa's busway is non-competitively operated, but it could be provided through competitive tendering at lower cost.

Seattle: Community Transit in the Seattle area has established a competitive rapid passenger transport system that achieves the lowest cost per passenger mile of any rapid passenger transport system in the nation.(83) Unit costs dropped 38 percent when competitive tendering was implemented,(84) and ridership has increased by nearly 60 percent, while overall passenger transport ridership in the Seattle area has declined.(85) More than 70 buses are operated at less than 10¢ per passenger mile -- from 30 to 70 percent less than the most cost effective rail systems in the nation. Incremental capital costs have been small, since the buses use already constructed motorways and HOV lanes. The average speed of operation is 23 miles per hour, which is competitive with that of rapid rail systems.

Houston: Houston's Metropolitan Transit Authority (MTA) was one of the first agencies in the nation to use competitive rapid passenger transport. Further, MTA is using competitive rapid passenger

Exhibit 2.5 (Continued)
The Competitive Future of Urban Passenger Transport

transport to serve suburban employment centers, providing expedited services to a market segment usually unserved by rapid passenger transport. (Even where rail systems serve such centers, their indirect routing through downtown make them unattractive to suburban commuters.) Nearly 100 commuter express buses operate. Costs savings average 24 percent,(86) and costs per passenger mile are less than half that of average rail systems.(87) Buses average 27 miles per hour, relying on Houston's extensive busway and HOV network. Houston's capital costs per mile for busways has averaged less than one-half that of new light rail systems.

San Diego: San Diego's Metropolitan Transit Development Board and San Diego County provide competitive rapid passenger transport service through competitive tendering. Operating costs per passenger mile are 3¢ higher than San Diego's light rail line,(88) but incremental construction costs (unlike light rail) are minimal, because the services operate on general purpose lanes. Speeds average approximately 30 miles per hour, equalling the average of less flexible commuter rail systems.

San Francisco: The San Francisco Bay Area Rapid Transit District (BART) uses buses to improve access to its rail rapid passenger transport system. When the system was converted to competitive tendering BART's operating cost per mile declined by 26 percent.(89) BART customers are able to board buses in communities well beyond rail line terminals and receive expedited travel to rail stations.

Other US Examples: Competitive rapid passenger transport services are also operated on busways and HOV lanes in other communities. For example:(90)

> The Shirley Highway Busway/HOV lane in the Washington, DC area carries more than 15,000 people per peak hour in buses (competitive and non-competitive) and car pools -- a volume exceeded by none of the light rail lines outside New York City.
>
> The El Monte Busway/HOV lane in the Los Angeles area carries 45,000 people daily -- considerably more than any new light rail line in the US. Both competitive and non-competitive services are provided.
>
> The Lincoln Tunnel bus lane in the New York area carries 35,000 people during peak hour on both competitive and non-competitive services, exceeding the performance of even Brazilian busways.

These cases also illustrate the ability of busway/HOV facilities to attract passengers. Busway/HOV lanes regularly attract double (or more) the person trips as general purpose motorway lanes. By comparison, new light rail systems achieve peak hour passenger volumes barely comparable to that carried by a single motorway lane.(91) One of the advantages of HOV lanes compared to rail lines is that they improve travel times for car pools. This makes rapid passenger transport service available to people who work outside central business districts. As a result, nearly two-thirds of HOV ridership is in car pools.(92)

Public planning processes that are under the control of passenger transport authorities frequently choose rail alternatives over bus alternatives for rapid transport, despite the excessive costs of rail and the fact that virtually the same customer advantages can be obtained through busways. In that public agencies are generally shielded from the market incentives that would maximize the impact of capital expenditures, it may be appropriate to require separate and independent approval of capital projects. This would be most effective where funding for the capital project was not from a dedicated (earmarked) source. Approval would be required from the national, state or provincial treasury, which would consider the most effective use to which the funding could be placed.

Separation of policy from operations.

A public agency that plans service cannot objectively choose between itself and other organizations for operation of services, even where service provision by others is in the public interest. In the present situation, public transport managers have incentives to violate the public interest. Their career advancement, like that of other public managers, depends upon an increasing staff and budget. Yet competitive tendering reduces budgets and staff sizes.

As developed nations convert their transit systems to competitive tendering, they are also reforming their transit governance systems. Recognizing the inherent conflict faced by public transit monopolies, governments are "separating policy from operations." The public transit agencies that determine which services are provided are not permitted to operate services. Their services must be provided under competitive tender or by entrepreneurs. Most conversions to competitive tendering involve separation of policy from operations. The most successful programs, those in London and San Diego, both incorporate separation of policy from operations.

Separation of policy from operations involves limiting the role of public agencies to deciding which services should be provided and then obtaining the services in the required quantity and quality for the lowest cost.

Public managers are evaluated based upon how efficiently and effectively they obtain public services.

Policy boards are able to focus more of their efforts in policy and less on operating issues.

Public operating departments are converted to publicly owned corporations (corporatization). Or they may be sold to the private sector (through asset sales). These firms may compete for tenders to perform the specified work along with firms already in the market.

The transit policy organization is free to provide for the highest levels of transit service.

The public policy body could prescribe minimum service levels and maximum fare levels. Public authorities establish service standards and entry and exit requirements (period of notice required to begin or discontinue service).

Commercial services could be used wherever possible. Entrepreneurs would be permitted to operate any part of the transit system, charging publicly prescribed fares.

Prescribed services that are not provided by entrepreneurs would be provided through competitive tendering.

Entrepreneurs would be permitted to provide any additional services, including taxicab services, that are not publicly prescribed. Regulation would be limited to fundamental issues such as safety and insurance.

Competitive Incentives: The Potential

If the US passenger transport trends of the last decade continue -- without incorporating competitive incentives -- ridership is projected to further decline, and passenger transport's work trip market share would be expected to drop another 19 percent to 4.1 percent in ten years. (See Table 11.)

On the other hand, the competitive strategies already being employed by some agencies offer the potential to reverse passenger transport's decline.(93) If over the next ten years, public passenger transport agencies embraced competitive tendering, it is conservatively estimated that:(94)

Ridership could increase by more than 51 percent, compared to a decline of 8 percent without competitive tendering ("Status Quo").

Passenger transport's work trip market share could increase by 28 percent to 6.8 percent (returning passenger transport's market share to above the 1980 level). Under the "Status Quo," market share would decline to 4.1 percent (from the 1990 level of 5.3 percent).

106,000 new full-time jobs could be created in passenger transport operations and administration. Additional jobs would be created in industries that supply goods and services to passenger transport.

No layoffs of public employees would occur, and public agencies would still continue to provide the overwhelming majority of services.

Incorporation of commercial services would improve the competitive projections.

A "Best" Case and "Worst" Case projection was also made. Under the "Best" Case, ridership would increase 84 percent; under the "Worst" Case, ridership would increase 21 percent. (See Tables 12 and 13.)

Toward a Customer-Oriented Regulatory Framework

A new passenger transport regulatory structure is needed, one that puts the interests of customers first. It must serve the riders, the taxpayers, and the community. Passenger transport services should be structured to serve the community by reducing traffic congestion and air pollution. This requires that no more than necessary be spent to produce a mile or hour of service, so that the highest level of passenger transport service can be provided. New Zealand's 1989 Transport Act provided for such a regulatory structure.

A customer-oriented regulatory structure would incorporate commercial services wherever possible, while using competitive tendering to obtain those services that are not provided by the market. The public role should be to prescribe minimum service levels and maximum fare levels. Public authorities would also establish service standards and entry and exit requirements (period of notice required to begin or discontinue service).

Entrepreneurs should be permitted to operate any part of the passenger transport system, charging publicly prescribed fares. More than one commercial operator could provide service on a route.

Prescribed services not provided by entrepreneurs should be provided through competitive tendering.

In addition, entrepreneurs should be permitted to provide any additional services that are not publicly prescribed, including taxicab service. Regulation of these services should be limited to fundamental matters such as safety and insurance.

Conclusion

Urban passenger transport continues to lose market share, and much of the loss is attributable their isolation from market discipline. New consumer oriented services have not been established. Costs are escalating inordinately. Wasteful capital investments are undertaken.

Market discipline can be brought to bear on passenger transport through competitive tendering, commercial services, competitive rapid transit services, independent approval of major capital projects and separation of policy from operations.

Where passenger transport is not exposed to market discipline, market share is likely to drop even further. For urban passenger transport to have a more positive future, a necessary condition is the incorporation of competitive incentives (market discipline).

Exhibit 2.5 (Continued)
The Competitive Future of Urban Passenger Transport

Table 1
1980 to 1990 Public Passenger Transport Work Trip Market Share for U.S. Metropolitan Areas with More than One Million Residents

Metropolitan Area (CMSA or MSA)	Work Trip Market Share 1980	1990	Change	Major Capital Expansions 1980-1990
Atlanta	7.3%	4.7%	-35.6%	*Heavy Rail Extended*
Baltimore	10.2%	7.7%	-24.5%	*New Rapid Rail Line*
Boston	11.7%	10.6%	-9.4%	*Rapid Rail Extended*
Buffalo	6.6%	4.7%	-28.8%	*New Light Rail /w Subway*
Charlotte	2.6%	1.8%	-30.8%	
Chicago	16.5%	13.7%	-17.0%	*Rapid Rail Extended*
Cincinnati	5.7%	3.7%	-35.1%	
Cleveland	7.8%	4.6%	-41.0%	
Columbus	4.2%	2.7%	-35.7%	
Dallas	3.5%	2.4%	-31.4%	
Denver	6.2%	4.2%	-32.3%	
Detroit	3.7%	2.4%	-34.0%	
Hartford	5.4%	3.7%	-31.5%	
Houston	3.0%	3.8%	26.7%	*New Busways*
Indianapolis	3.2%	2.1%	-34.4%	
Kansas City	3.8%	2.1%	-44.7%	
Los Angeles	5.1%	4.6%	-9.8%	
Miami	4.9%	4.4%	-10.2%	*New Rapid rail & People Mover*
Milwaukee	7.1%	4.9%	-31.0%	
Minneapolis	8.6%	5.3%	-38.4%	
New York	28.0%	26.6%	-5.0%	*New Subway*
Norfolk	4.6%	2.2%	-52.2%	
Orlando	1.7%	1.5%	-11.8%	
Philadelphia	12.5%	10.2%	-18.4%	*New Subway*
Phoenix	2.0%	2.1%	5.0%	
Pittsburgh	11.0%	7.9%	-28.2%	*Light Rail Extended & New Subway*
Portland	8.1%	5.4%	-33.3%	*New Light Rail*
Providence	4.0%	2.6%	-35.2%	
Rochester	5.2%	3.2%	-38.5%	
Sacramento	3.4%	2.4%	-29.4%	
Salt Lake City	4.9%	3.0%	-38.8%	
San Antonio	4.6%	3.7%	-19.6%	
San Diego	3.3%	3.3%	0.0%	*New Light Rail*
San Francisco	11.2%	9.3%	-17.0%	*New Light Rail*
Seattle	8.2%	6.3%	-23.2%	
St. Louis	5.7%	3.0%	-47.4%	
Tampa	1.7%	1.5%	-11.8%	
Washington	14.8%	13.7%	-7.4%	*Rapid Rail Extended*
Metro average	7.0%	5.4%	-23.1%	

Table 2
Personal and Public Transportation Costs

	Personal (Automobile): 1991	Public Transit: 1991
Total Expenditures (In Billions)	$490.7	$20.5
User Expenditures (In Billions)	$493.0	$5.6
Excess/Deficit (In Billions)	$2.3	($14.9)
User Pay %	100.5%	27.3%
Person Miles (In Billions)	3,065.3	37.5
Expenditures per Person Mile	16.1¢	54.7¢
User Expenditures per Person Mile	16.1¢	14.9¢
Tax Subsidy per Person Mile (Non-user tax subsidies)	0.1¢	39.6¢

Highway expenditures estimate includes all personal, business, and government expenditures on highway related personal and business travel. Includes purchase of vehicles, taxes, maintenance, operation, insurance, and licensing. Derived from *National Transportation Statistics*, Section 15, and National Income and Product Account data.

Table 3
Public Transit Unit Cost Increase following Revenue Increase: 1979 to 1990
(Inflation Adjusted)

Change in Unit Costs (Cost per Mile)	Percentage of Public Agencies by Funding Increase Quintile Top 20%	2nd 20%	3rd 20%	4th 20%	5th 20%
50% and Over	30%	9%	9%	3%	0%
30% to 50%	27%	42%	9%	3%	0%
10% to 30%	36%	39%	49%	49%	50%
0% to 10%	6%	6%	18%	12%	21%
Less than 0%	0%	3%	15%	33%	29%
Average Change in Unit Costs	48%	30%	19%	10%	10%

From fiscal year 1990 sample of 166 public transit agencies accounting for more than 93 percent of US passenger transport operating costs (motor bus, electric bus, light rail and heavy rail).

Table 4
Relationship of New Revenue for Operations to Change in Cost per Hour
1984 to 1990

Transit Agency Change in Fares and Operating Subsidies (Inflation Adjusted)	Average Increase in Revenues (Fares and Operating Subsidies)	Average Increase: Cost per Hour	Number of Transit Agencies in Category
+20% and Over	+34.9%	+6.3%	5
0% to +19.9%	+8.7%	+3.5%	7
Decrease	-5.8%	+2.1%	5

Sample of 17 large and medium sized public transit agencies.
Calculated from Canadian Urban Transit Association (CUTA) data.

Table 5
Extent of Competitive Operation* in US Metropolitan Areas: 1991

Competitively Operated in 1991	Metropolitan Area	
Above 40%	Austin	Miami
30% to 40%	New York	San Diego
20% to 29%	Dallas-Ft. Worth	Denver
15% to 19%	Houston	Minneapolis-St. Paul
10% to 14%	Kansas City San Francisco	Los Angeles New Orleans
5% to 9%	Atlanta Chicago Sacramento Washington, DC	Baltimore Phoenix Seattle

(Based on Number of Buses) * Competitive Tendering and Commercial Services.

Table 6
U.S. Public Transport Cost per Passenger Mile Top 50 Systems: 1990

Rank	State	System	Type	Cost ¢
1	WA	Seattle-Snohomish Co. (ATE)	MB-CT	7.85
2	NJ	Academy Lines	MB-CO	9.94
3	NJ	Suburban Trans Corp	MB-CO	10.33
4	TX	Austin (Laidlaw)	MB-CT	11.67
5	TX	Houston (Greyhound)	MB-CT	11.7
6	CA	San Diego Trolley	LR	11.71
7	IN	Chicago-Hammond Yellow Coach	MB-CO	11.76
8	NJ	Hudson Tr Lines-Mahwah	MB-CO	14.02
9	IL	Chicago-Burlington North	CR	14.84
10	CT	Hartford-Contractors	MB-CT	15.27
11	NJ	Bergenfield-Rockland	MB-CO	16.66
12	CA	Sacramento-Yolo Co.	MB-CT	17.22
13	NJ	Lakeland Bus Lines, Inc.	MB-CO	17.34
14	GA	Atlanta-MARTA	RR	17.37
15	CA	San Francisco-Caltrans	CR	17.40
16	TX	El Paso PTA	MB	17.41
17	KS	Kansas City Johnson Co. (ATE)	MB-CT	18.16
18	PA	Pittsburgh-Beaver County	MB-CT	18.18
19	NJ	Rockland Coaches, Inc.	MB-CO	18.95
20	IL	Chicago & NW Tr Co	CR	19.21
21	CA	Santa Monica Muni Bus	MB	20.39
22	CA	San Francisco-BART	RR	20.96
23	NY	Syracuse-Contractors	MB-CT	21.31
24	NJ	Port Authority TC	RR	21.32
25	IN	Chicago-South Shore	CR	22.05
26	HI	Honolulu DOT Service	MB	22.37
27	NJ	DeCamp Bus Lines	MB-CO	22.48
28	WA	Richland-Ben Franklin	MB	22.93
29	CA	Los Angeles - contractors	MB-CT	23.0
30	IL	DuPage Motor Coach	MB-CT	23.13
31	LA	New Orleans-West (ATC)	MB-CT	23.14
32	MA	Boston-Amtrak/MBTA	CR	23.62
33	OR	Portland-Tri-County MTD	LR	24.09
34	WA	Kitsap County Tr	MB	24.17
35	TX	San Antonio-VIA Metro Tr	MB	24.41
36	UT	Salt Lake City-Utah TA	MB	24.45
37	FL	Lee County Tr	MB	24.48
38	DC	Washington, DC-WMATA	RR	24.49
39	LA	New Orleans-RTA	LR	24.99
40	IL	Chicago-Commuter Rail Bd	CR	25.07
41	NY	New York Bus Tours, Inc.	MB-CO	25.12
42	TX	The T-Fort Worth	MB	25.42
43	CA	N San Diego Tr	MB	25.45
44	CA	San Francisco-Golden Gate TD	MB	25.49
45	CA	San Diego-contractors	MB-CT	25.82
46	NY	Liberty Line Tr Inc.	MB	26.73
47	IL	Des Plaines-No Suburb TD	MB	27.06
48	GA	Atlanta: Cobb County (ATE)	MB-CT	27.25
49	NY	New York-MTNR	CR	27.4
50	NJ	Newark-NJT Corp	CR	27.54

Type Codes: CR = commuter rail, non-competitive; LR = light rail, non-competitive; MB = motor bus, non-competitive; MB-CT = motor bus, competitive; MB-CO = motor bus, entrepreneurial; RR = metro, non-competitive.

Table 7
Proposals per Competitive Procurement by Year

Years	Requests for Proposals	Average Number of Proposals
1984 and Before	8	1.8
1985 - 1986	14	4.1
1987 - 1988	17	4.2
1989 - 1990	20	4.0
1991 - 1992	19	4.7
All	78	4.0

Source: Wendell Cox Consultancy in association with Tavers Morgan New Zealand, *Competition in Overseas Public Transport Competitive Tendering: Africa, the Americas, Australia, and Continental Europe*, (Belleville, IL: Wendell Cox Consultancy, August 1992).

Exhibit 2.5 (Continued)
The Competitive Future of Urban Passenger Transport

Table 8
Comparison of Competitive Public Transit Costs per Passenger Mile to Non-Competitive Costs in Same Urban Area: 1990

State	Competitive System	Competitive Cost	Non-Competitive Bus	Non-Competitive Light or Rapid Rail	Non-Competitive Commuter Rail
WA	Seattle-Snohomish Co (ATE)	7.9¢	37.5¢		
NJ	Academy Lines	9.9¢	34.0¢	44.3¢	27.5¢
TX	Austin (Laidlaw)	11.7¢	37.0¢		
TX	Houston (Greyhound)	11.7¢	31.4¢		
IN	Chicago-Hammond Yellow	11.8¢	43.2¢	27.8¢	14.8¢
CT	Hartford-Contractors	15.8¢	43.6¢		
CA	Sacramento-Yolo Co.	17.2¢	47.3¢	37.3¢	
KS	Kansas City: Johnson Co	18.2¢	58.8¢		
PA	Pittsburgh-Beaver County	18.2¢	36.3¢	44.0¢	
NY	Syracuse-Contractors	21.3¢	53.4¢		
CA	Los Angeles-Contractors	23.0¢	34.3¢	58.4¢	
LA	New Orleans-West (ATC)	23.1¢	35.7¢	25.0¢	
CA	San Diego-Contractors	25.8¢	30.2¢	11.7¢	
GA	Atlanta: Cobb County (ATE)	27.3¢	37.7¢	17.4¢	
AZ	Phoenix-Contractors	28.9¢	31.9¢		
CA	San Francisco-BART (Laidlaw	31.9¢	45.3¢	21.0¢	17.4¢
MA	Springfield-Contractors	33.0¢	48.6¢		
Comparative Factor		1.0	2.4	1.9	1.5

No more than one competitive system shown per urban area.
Source: Federal Passenger Transport Administration Section 15.

Table 9
Number of Proposals by Size of Competitive Procurement

Number of Buses	Operators Provide Buses: Proposals	Operators Provide Buses: Average Number of Proposals	Public Agency Provides Buses: Proposals	Public Agency Provides Buses: Average Number of Proposals
50 and Over	4	1.0	10	3.6
30 to 49	12	4.2	12	4.8
15 to 29	14	4.7	10	4.0
Fewer than 15	15	3.7	1	5.0
All	45	3.9	33	4.2

Source: Wendell Cox Consultancy in association with Tavers Morgan New Zealand, *Competition in Overseas Public Transport Competitive Tendering: Africa, the Americas, Australia, and Continental Europe*, (Belleville, IL: Wendell Cox Consultancy, August 1992).

Table 10
Cost per Passenger Mile for Rapid Transit and Light Rail

Type of Service	Cost Per Passenger Mile: Capital Cost (Compared to Busway/HOV)*	Operating Cost	Lowest Cost System	Average Speed (MPH)
Competitive Bus	-100% to 0%	18¢	10¢	24.1
Commuter Rail	N/A	28¢	15¢	30.9
Rapid Rail	+513%	33¢	17¢	23.4
Light Rail	+494%	42¢	13¢	13.7
Non-Competitive Bus	+0%-100%	43¢	17¢	24.1

*HOV: high occupancy vehicle lanes for car pools and buses. Capital costs are calculated per passenger trip. Derived from Federal Transit Administration, Section 15 and San Diego-MTDB data and John Kain, Ross Gittell, Amrita Daniere, Sanjay Daniel, Tsur Summerville, and Liu Zhi, *Increasing the Productivity of the Nation's Urban Transportation Infrastructure* (Washington, DC: US Department of Transportation, Federal Transit Administration, Technology Sharing Program, January 1992).

Table 11
The Potential for Increasing Passenger Transport Service and Usage through Competitive Tendering: 10 Years

	Status Quo 10th Year	Competitive Tendering: 10th Year	Competitive Tendering: Compared to Status Quo
Miles of Service *Change from 1991*	2.3 Billion *+0.4%*	4.0 Billion *+74%*	*+74%*
Passengers *Change from 1991*	6.6 Billion *-8%*	10.9 Billion *+51%*	*+64%*
Average Passenger Fare *Change from 1991*	82¢ *+21%*	68¢ *No Change*	*-18%*
New Full Time Jobs *Change from 1990*	800 *+0.4%*	106,500 *+59.5%*	*+12,633%*
Work Trip Market Share *Change from 1990*	4.1% *-22%*	6.8% *+28%*	*+64%*

Figures rounded, percentages based upon actual data.
Assumptions in end note.

Table 12
The Potential for Increasing Passenger Transport Service and Usage through Competitive Tendering: 10 Years: "Worst" Case

	Status Quo 10th Year	Competitive Tendering: 10th Year	Competitive Tendering: Compared to Status Quo
Miles of Service *Change from 1991*	2.3 Billion *+0.4%*	3.5 Billion *+54%*	*+54%*
Passengers *Change from 1991*	6.6 Billion *-8%*	8.7 Billion *+51%*	*+31%*
Average Passenger Fare *Change from 1991*	82¢ *+21%*	68¢ *No Change*	*-18%*
New Full Time Jobs *Change from 1990*	600 *+0.4%*	77,600 *+43%*	*+9,906%*
Work Trip Market Share *Change from 1990*	4.1% *-22%*	5.4% *+2%*	*+31%*

Table V Assumptions, Except 0.38% new passengers assumed for each new 1 percent in service.

Table 13
The Potential for Increasing Passenger Transport Service and Usage through Competitive Tendering: 10 Years: *"Best" Case*

	Status Quo 10th Year	Competitive Tendering: 10th Year	Competitive Tendering: Compared to Status Quo
Miles of Service *Change from 1991*	2.3 Billion *+0.4%*	4.7 Billion *+105%*	*+104%*
Passengers *Change from 1991*	6.6 Billion *-8%*	14.7 Billion *+84%*	*+122%*
Average Passenger Fare *Change from 1991*	82¢ *+21%*	68¢ *No Change*	*-18%*
New Full Time Jobs *Change from 1990*	800 *+0.4%*	150,700 *+43%*	*+19,330%*
Work Trip Market Share *Change from 1990*	4.1% *-22%*	9.2% *+2%*	*+123%*

Table V Assumptions, Except 1.00% new passengers assumed for each new 1 percent in service.

Exhibit 2.5 (Continued)
The Competitive Future of Urban Passenger Transport

Figure 1

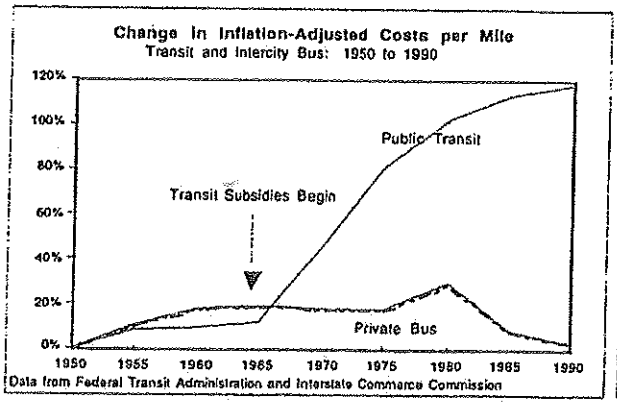


Figure 3

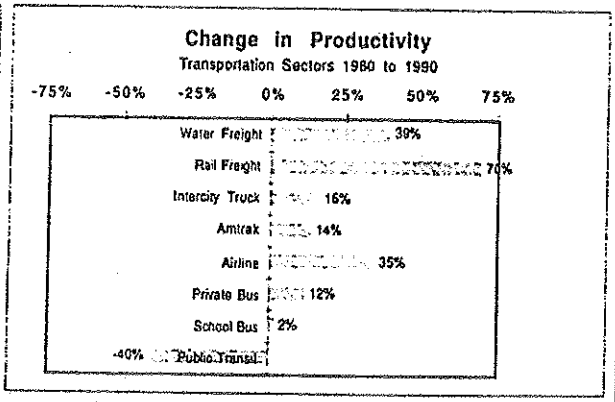


Figure 2

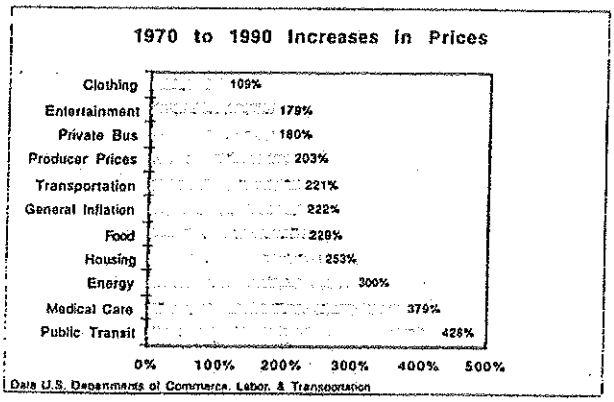
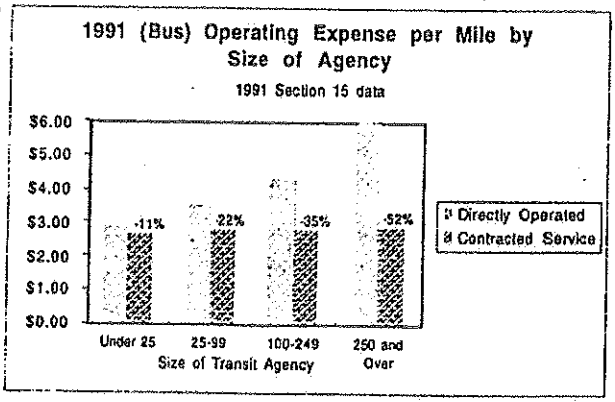


Figure 4



End Notes:

1. Alan E. Pisarski, *New Perspectives in Commuting* (Washington, DC: US Department of Transportation, Federal Highway Administration, Office of Highway Information Management, July 1992). Market share for taxis (0.2 percent) are included by the Census as a form of public transit. The taxi share has been subtracted from these figures.

2. Ibid. Also derived from US Census Bureau data.

3. Calculated from US Census Bureau data.

4. U.S. Department of Transportation, Federal Transit Administration, Section 15 data (FTA Section 15). Data is for the four primary modes of transit: motor bus, electric bus, rapid rail, and light rail (street car).

5. According to the American Public Transit Association official as reported in Bill Sammon, "RTA has Miles to Go to Recapture Lost Riders," *The Plain Dealer* (Cleveland) June 28, 1993.

6. Calculated from Chris Bushell, ed., *Jane's Urban Transport Systems* (Coulsdon, Surrey, UK: Jane's Information Group, multiple editions).

7. See for example, John Pucher, "Capitalism, Socialism, and Urban Transportation," *APA Journal*, 278, 2, 1990 and Charles Lave, "Those Unstoppable Automobiles: Do What We Will, People Are Going to Drive Their Own Cars," *Washington Post*, August 15, 1992.

8. Review of trends since 1983 in 20 major international urban areas (national capitals and metropolitan areas of more than one million population). Calculated from Chris Bushell, ed. *Jane's Urban Transport Systems* (Coulsdon, Surrey, UK: Jane's Information Group, multiple editions).

9. Ibid.

10. Calculated from Canadian Urban Transit Association data.

11. "Vancouver Commuter Rail Losing Out to Autos," *Daily Journal of Commerce* (Seattle, WA: July 27, 1993) quotes Vancouver Mayor Gordon Campbell (who is also chair of the Vancouver Regional Transit System) and BC Ministry of Transport Officials.

12. Inner city population density declines were masked for decades by growth in other neighborhoods within the city limits. For example, inner city Philadelphia wards reached their peak populations in 1830 according to Kenneth T. Jackson, *Crabgrass Frontier: The Suburbanization of the United States*, (New York, NY: Oxford University Press, 1985).

13. The cities of the US, Canada, Australia, and New Zealand historically have been less densely populated than comparable cities in Europe, allowing for a greater proportion of the population to afford detached, single-family dwellings surrounded by lawns and gardens. The American residential "lifestyle" is evident in these countries, although suburbanization of jobs and retail is occurring at a slower pace than in the US.

14. Peter Gordon, "Myths and Facts of Nation's Transit Policy," *Policy Insight*, No. 131 (Los Angeles, CA: Reason Foundation, October 1991).

15. Joel Garreau, *Edge City: Life on the New Frontier* (New York, NY: Doubleday, 1991) and the *National Office Market Report* (Houston, TX: Office Network, 1987).

16. Data from the 1990 US Census, US Department of Commerce, Bureau of the Census. By comparison, slightly more than 25 percent of American live in central cities, and 24 percent live in rural areas.

17. John D. Kasarda, *People and Jobs on the Move: America's New Spacial Dynamics*, Paper presented to America's New Economic Geography (conference), Rutgers University, Center for Urban Policy Research, Washington, DC, April, 1987.

18. Some low-density areas are increasing in population density as in-filling occurs. This does not represent a trend toward "densification," which would require higher densities to be achieved in already developed areas.

19. Includes those urban areas with greater than 500,000 population in 1950.

20. On average, the cities added 53 percent in land area and decreased 12 percent in population.

21. These suburbs added 262 percent in land area and 174 percent in population.

22. Land area increased 179 percent and population increased percent.

23. There has been some moderation in the rate of increase in transit costs in recent years as a result of constraints and the threat of privatization. Unit costs remain far in excess of the market rate and productivity remains below standard.

24. Analysis of data in the *Government Finance* series (Washington, DC: U.S. Department of Commerce, Bureau of the Census: annual) and *Trends in Health Spending: An Update* (Washington, DC: Congress of the United States, Congressional Budget Office, June 1993).

25. Jean Love, "Mass Transit: A Barren Promise," *Across the Board*, The Conference Board (New York, NY: July-August 1992)

Exhibit 2.5 (Continued)
The Competitive Future of Urban Passenger Transport

26. Based upon difference in cost per mile trend.

27. Wendell Cox, Jean Love, and Samuel A. Brunelli, *The Livable American "City:" Toward an Environmentally Friendly American Dream*, Paper presented at Environmental Strategies for a Prosperous World: The National Leadership Summit on the Environment, Energy, and Natural Resources, the American Legislative Exchange Council, Perdido Beach, AL: April 24, 1993.

28. In 1990, calculated from 1970. New service costed at the 1970 rate in 1990 dollars.

29. Department of Transport, Scottish Office/Welsh Office, *Buses* (London, UK: Her Majesty's Stationery Office, July 1984).

30. See Wendell Cox and Jean Love, "Controlling the Demand for Taxes through Competitive Incentives," *State Factor*, Vol.17, No.12 (Washington, DC: American Legislative Exchange Council, December 1991); Wendell Cox and Samuel Brunelli, "The Untold Story: The Rapid Growth in City Revenues," *The State Factor*, Vol.18, No.10 (Washington, DC: American Legislative Exchange Council, 1992); and Eric Hanushek, "The Impact of Differential Expenditures on School Performance," *Issue Analysis* (Washington, DC: American Legislative Exchange Council, March 1990).

31. Analysis based upon sample of all 166 largest transit agencies for which national data is available for 1979 and 1990. Sources include the US Department of Transportation, Urban Mass Transportation Administration Section 15 Reporting System and the American Public Transit Association.

32. The availability of large amounts of federal funding, and the Congressional earmarking process has encouraged urban areas to develop expensive rail systems. It is likely that if urban areas had been required to pay for such systems themselves, they would have either not been built, or more cost effective systems would have been chosen. The tendency of federal funding to skew local projects toward less effective and inefficient options was documented by the Congressional Budget Office in *Efficient Investments in Waste-Water Treatment* (Washington: 1985)

33. Calculated from U.S. Census data.

34. Federal City Council, *Transit in the Nation's Capital: What Lies Ahead* (Washington, DC: US Department of Transportation, Urban Mass Transportation Administration, 1986).

35. Don Pickrell, *Urban Rail Transit Projects: Forecasts versus Actual Ridership and Costs* (Washington, DC: US Department of Transportation, Urban Mass Transportation Administration, 1989).

36. The paradox is that many people ride Atlanta's rail system -- almost half of Atlanta's transit ridership is on its rail system, yet overall trips on the transit system have increased less than four percent since the rail system opened. (see John Kain, *Deception in Dallas: Strategic Misrepresentation in Rail Transit Promotion and Evaluation*, APA Journal [American Planning Association], Spring 1990).

37. Calculated from Roger Snyder and Antonio Villaraigosa, "Commuting on the Backs of the Poor," *The Los Angeles Times*, November 27, 1992.

38. John Kain, *Deception in Dallas: Strategic Misrepresentation in Rail Transit Promotion and Evaluation*, APA Journal [American Planning Association], Spring 1990). Kain uses a figure of $185.50 per round trip rider per day, which has been annualized in the text. Kain estimates that the proposed rail system would attract only 6,500 new transit trips daily, which is approximately one-one thousandth of Dallas County's more than 5.5 million daily person trips.

39. Wendell Cox and Jean Love, *Designing Competitive Contracting Systems For The Public Good: A Review of the U.S. Experience*, paper presented to the International Conference on Bus Ownership and Competition in Thredbo, New South Wales (1989).

40. For a description of the reasons for the slow acceptance of competitive contracting in the US, see Jean Love and Jim Seal, *Competitive Contracting in the US: Overcoming Barriers*, Paper presented to the Second International Conference on Privatization and Deregulation in Passenger Transportation in Tampere, Finland (June 1991).

41. Wendell Cox Consultancy in association with Travers Morgan New Zealand, *Competition in Overseas Public Transport Competitive Tendering: Africa, the Americas, Australia, and Continental Europe*, (Belleville, IL: Wendell Cox Consultancy, August 1992).

42. Data from *Metropolitan San Diego Short Range Transit Plan FY 1994-2001*, Metropolitan Transit Development Board (San Diego: June 1993).

43. Ibid.

44. Ibid.

45. According to 1990 Urban Mass Transportation Administration and San Diego Metropolitan Transit Development Board data, the only large bus and rail system (or bus only system) in the US with a higher fare recovery ratio was New Jersey Transit.

46. FTA Section 15, 1991.

47. Comparison of San Diego Transit rate for public-private competition with its non-competitive rate. Assumes San Diego Transit public-private competition rate for additional bus services.

48. "Bus Service Continuation Project," *Private Sector Briefs*, Vol.4, No.6 (Washington, DC: US Department of Transportation, Federal Transit Administration, Office of Private Sector Initiatives, July 1992).

49. Price Waterhouse, *Bus Service Continuation Project Fiscal Year 1988-89 Evaluation Report* (1991).

50. KPMG Peat Marwick in association with Mundle & Associates, Inc. and Transportation Support Group, Inc., *Denver RTD Privatization Performance Audit Update: July 1990 - June 1991: Final Report*. (November 1, 1991).

51. Ibid.

52. Jean Love and Jim Seal, *Competitive Contracting in the US: Overcoming Barriers*, Paper presented to the Second International Conference on Privatization and Deregulation in Passenger Transportation in Tampere, Finland (June 1991).

53. KPMG Peat Marwick in association with Mundle & Associates, Inc. and Transportation Support Group, Inc., *Denver RTD Privatization Performance Audit Update: July 1990 - June 1991: Final Report*. (November 1, 1991).

54. *National Urban Mass Transportation Statistics: Section 15 Annual Report* (Washington, DC: US Department of Transportation, Federal Transit Administration, 1992).

55. FTA Section 15 data.

56. *National Urban Mass Transportation Statistics: Section 15 Annual Report* (Washington, DC: US Department of Transportation, Federal Transit Administration, 1992).

57. "Contracted Bus Operations and Maintenance: Fairfax County, Virginia," *Private Sector Briefs* (Washington, DC: US Department of Transportation, Urban Mass Transportation Administration, Office of Private Sector Initiatives, June 2, 1986).

58. Ibid.

59. *Annual Report 1992/93*, London Transport (London, UK: 1993).

60. Nick Newton, *Competitive Tendering: The London Experience*, presentation to the 3rd International Conference on Competition and Ownership in Surface Passenger Transport (Toronto: September 1993).

61. *Annual Report 1992/93*, London Transport (London, UK: 1993).

62. Above analysis based upon data from London Transport *Annual Reports* (multiple editions), John Hibbs, *On the Move: A Market for Mobility on the Roads*, Hobart Paper 121, Institute of Economic Affairs (London: 1993), and *Buses* (Parliamentary White Paper), Department of Transport, Scottish Office and Welsh Office, Her Majesty's Stationary Office (London: 1985) and *National Urban Mass Transportation Statistics: Section 15 Annual Report* (Washington, DC: US Department of Transportation, Urban Mass Transportation Administration, multiple editions).

63. American Bus Association, *Transit Times*, (Washington, DC: April 1990).

64. *The Danish Model: Competition and Quality in Public Transport*, Hovedstadsomradets Takikselskab (Copenhagen: 1992).

65. Bjørn Andersen, *Tendering in Scandinavia: Systems and Results: Sustainable Competition Through Tendering?*, paper delivered to the Third International Conference on Competition and Ownership in Surface Passenger Transport, Toronto, September 1993.

66. Ian Wallis, *Competitive Tendering in New Zealand: Evolving Policies and Experience*, paper delivered at the 2nd International Conference on Privatization and Deregulation in Passenger Transport (Tampere, Finland: 1991).

67. See Bjørn Andersen's paper, Workshop 2, same volume and Wendell Cox and Jean Love, *International Experience in Competitive Tendering*, paper delivered at the 2nd International Conference on Privatization and Deregulation in Passenger Transport (Tampere, Finland: 1991).

68. Carole Cooper, Robin Hamilton, Harry Meshabela, Shaun McKay, Elizabeth Sidiropoulos, Clare Gordon-Brown, Stuart Murphy and Coletane Markham, *Race Relations Survey 1992/93* (Johannesburg, South Africa: South African Institute of Race Relations, 1993).

69. Urban Mobility Corporation, KPMG Peat Marwick, and Subhash Mundle, *The Miami Jitneys* (Washington, DC: Department of Transportation, Federal Transit Administration, Office of Private Sector Initiatives, August 1992).

70. Ibid.

71. *Van and Car Service Issue Affecting NYCTA Surface Operations*, Metropolitan Transit Authority (New York: January 1992).

72. For more information, see E. S. Savas, Sigurd Grava, and Roy Sparrow, *The Private Sector in Public Transportation in New York City: A Policy Perspective*, (New York, NY: Institute for Transportation Systems, The City University of New York, 1991).

73. Seth Faison, "Bus-Fare Cuts Fail to Lure Queen's Riders: Private Vans Thriving Despite Price Pressure," *The New York Times* (November 29, 1992).

74. Analysis of *National Urban Mass Transportation Statistics: Section 15 Annual Report 1990* (Washington, DC: US Department of Transportation, Federal Transit Administration, 1991).

75. Calculated from Chris Bushell, ed. *Jane's Urban Transport Systems* (Coulsdon, Surrey, UK: Jane's Information Group, multiple editions).

76. Ibid.

77. Only commuter rail services operated faster than competitive bus rapid transit services. However commuter rail systems normally drop downtown passengers off at a single station, requiring transfer to other services, while bus services circulate in the downtown area making many transfers unnecessary. It is reasonable to assume that express bus passengers travel at overall average speeds at least as great as those of commuter rail passengers. Commuter rail operates under either electric or diesel power.

78. Car pooling declined substantially in the 1980s. During that period, little public investment was applied to build HOV lanes and other facilities that would have provided a faster trip for car pool.

79. John Kain, Ross Gittell, Amrita Daniere, Sanjay Daniel, Tsur Summerville, and Liu Zhi, *Increasing the Productivity of the Nation's Urban Transportation Infrastructure* (Washington, DC: US Department of Transportation, Federal Transit Administration, Technology Sharing Program, January 1992).

80. Calculated from Chris Bushell, ed. *Jane's Urban Transport Systems* (Coulsdon, Surrey, UK: Jane's Information Group, multiple editions).

81. John Kain, Ross Gittell, Amrita Daniere, Sanjay Daniel, Tsur Summerville, and Liu Zhi, *Increasing the Productivity of the Nation's Urban Transportation Infrastructure* (Washington, DC: US Department of Transportation, Federal Transit Administration, Technology Sharing Program, January 1992).

82. John Kain, Ross Gittell, Amrita Daniere, Sanjay Daniel, Tsur Summerville, and Liu Zhi, *Increasing the Productivity of the Nation's Urban Transportation Infrastructure* (Washington, DC: US Department of Transportation, Federal Transit Administration, Technology Sharing Program, January 1992).

83. Analysis of FTA Section 15 data (1991).

Exhibit 2.5 (Continued)
The Competitive Future of Urban Passenger Transport

84. Calculated from *Commuter Bus Service: Total Cost Comparison* (Lynwood, WA: Community Transit, January 8, 1986).

85. Calculated from *Metro Contract Service: An Update* (Lynwood, WA: Community Transit, June 12, 1985) and *National Urban Mass Transportation Statistics: Section 15 Annual Report 1991* (Washington, DC: US Department of Transportation, Federal Transit Administration, 1992).

86. "Houston: Competitive Contracting Update," *Private Sector Briefs*, Vol.4, No.10 (Washington, DC: US Department of Transportation, Federal Transit Administration, Office of Private Sector Initiatives, March 1993).

87. *National Urban Mass Transportation Statistics: Section 15 Annual Report* (Washington, DC: US Department of Transportation, Federal Transit Administration, 1991).

88. *National Urban Mass Transportation Statistics: Section 15 Annual Report* (Washington, DC: US Department of Transportation, Federal Transit Administration, 1991).

89. Based upon comparison of first year's competitive rate per hour to previous year's non-competitive rate.

90. Dennis L. Christiansen, *High-Occupancy Vehicle System Development in the United States*, (College Station, TX: Texas Transportation Institute, December 1990).

91. According to Cambridge Systematics with the Urban Institute, Sydec, Inc, Herbert S. Levinson, Abrams-Cherwony & Associates and Lee & Elliot, *Characteristics of Urban Transportation Systems* (Washington, DC: US Department of Transportation, Technology Sharing Program, September 1992), the ideal capacity of a freeway lane is 2,200 person trips per peak hour. Dennis L Christiansen, *High-Occupancy Vehicle System Development in the United States: A White Paper* (College Station, TX: Texas Transportation Institute, Texas A&M University, December 1990), reports that new light rail lines achieve from 500 to 2,500 in peak hour person trips.

92. Dennis L. Christiansen, *High-Occupancy Vehicle System Development in the United States*, (College Station, TX: Texas Transportation Institute, December 1990).

93. Motor bus, electric bus, rapid rail and light rail (street car).

Assumptions:

1. Overall operating revenues (subsidies and fares) would continue to increase at the inflation adjusted 1979 to 1990 national rate (approximately 2 percent annually).

2. Services would be subjected to public-private competition at a rate no greater than that of natural employee attrition (there would be no layoffs).

3. National job growth is assumed to be 14.5 percent, and transit's work trip market share is estimated by applying the change in overall ridership to the increase in national employment.

4. Passengers would increase at 0.69 percent for each 1.00 percent increase in service (based upon Michael D. Meyer and Eric J. Miller, *Urban Transportation Planning: A Decision Oriented Approach*, McGraw Hill Book Company (New York: 1984).

4. Under the status quo:

   a. Operating costs per mile would continue to increase at the inflation adjusted 1979 to 1990 national rate (approximately 2 percent annually).

   b. Average passenger fares would rise at the same inflation adjusted rate as overall operating revenues (see #1, above).

   c. Ridership per mile would continue to decline at the 1978 to 1990 rate, approximately 1.6 percent per year. (1978 is used, rather than 1979, to eliminate the impact of the 1979 gasoline allocation crisis, which increased transit ridership temporarily. Use of 1979 data would overstate the extent of transit's downward ridership trend).

5. Under Public-Private Competition:

   a. Operating costs would decrease at the national competitive bus industry rate from 1979 to 1990 (a rate similar to the annual decrease rates in San Diego and Minneapolis-St. Paul, where public-private competition has been implemented).

   b. Average passenger fares would remain constant (inflation adjusted).

   c. Savings and higher fare revenues would be used to establish new services.

   d. New transit employment would be created at 0.8 percent for each 1.0 percent increase in service. This assumes that the new competitive services would be more productive, requiring fewer employees per unit of service.

94. This projection assumes the use of public-private competition, with conversion at a rate approximately one-half that of natural employee attrition. More favorable results would be obtained by using a higher conversion rate relative to employee attrition, and by incorporating entrepreneurial services. London has achieved annual productivity improvements nearly triple that of San Diego, by accelerating the conversion to public-private competition.

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Exhibit 2.6
LIVING WITH THE CAR
The Economist, December 6-12, 1997

There is no space, no money and no appetite for endless road-building. That is why road pricing is coming.

SINGAPORE invented it. Norway copied it. Stockholm spent 20 years and $1 billion before thinking again. Hong Kong retreated at the last moment in the face of a popular revolt . Politicians are terrified of road pricing. How can you get people to pay for something that has always been free? Yet governments all around the world, faced by worsening traffic congestion and pollution, are steeling their nerves and forcing motorists to pay for road space. Tolling technology is advancing so fast that $3 billion-worth of electronic charging systems have already been installed worldwide. From Bergen and Bilbao to Paris and New York, motorists are learning that road space does not come free.

The motives for charging vary. Many countries, notably Spain, France, Italy and Japan, and several American states have long collected tolls as a way of financing the building of new motorways. In New Zealand, road users pay directly for roads through vehicle-license fees, a levy on gasoline and weight-distance charges for heavy goods vehicles. The latest automated tolling equipment, which deducts charges from electronically tagged vehicles (traveling at speeds of up to 100 mph) is being installed in more than 20 countries around the world. The tags are linked to in-car meters which can be loaded either with a preset credit or used to log travel for billing later. Charging, aimed at deterring excess traffic from entering cities, is more controversial but is gaining acceptance.

It is no surprise that Singapore, with its own peculiar brand of democracy (selling bubble-gum is illegal), has been the first to attempt to use road pricing to limit the growth of urban traffic. After 22 years'. . ., its planners are convinced that road pricing is the key to solving the city's traffic problems. New technology to be introduced next year will enable its current relatively crude system of area-access charges, based on paper licenses, to be replaced by electronic tolls that vary according to time of day.

In Europe, road-pricing schemes have been successfully operated for more than five years in Trondheim, Bergen and Oslo. Trondheim, Norway's third-largest city, desperately needed a ring-road to stop huge flows of traffic coming through the centre of town. After much debate, the local council hit upon the idea of charging for access to the city centre by putting up a ring of 12 toll stations, and using the revenues to pay for the construction of the new road. A high tariff applies from 6 am till 10 am, a lower one from then till 5 pm. After that, travel is free until next morning. There is also a discount for cars with an electronic tag which allows them to go through tolls without stopping, thereby reducing the congestion caused by toll queues.

In Oslo, motorists pay a toll of about $1.70 every time they enter the cordon ring. The pricing scheme has proved so successful in financing much-needed transport developments that the city authority is now considering whether it should be extended.

The Netherlands has a more ambitious plan to introduce road pricing, covering the densely populated Randstad area of the four main towns—Amsterdam, Rotterdam, Utrecht and the Hague. It is due to come into effect in 2001.

Cars will have to carry a smart card containing cash credits that can be used for other transactions. The charge for driving into each of the four cities will be set high, at about 15 ecus ($17), between 6 am and 10 am, but the price will fall to 3 ecus at other times. Non-payers will be caught on video cameras and sent a bill by the tax office, using the registration details culled from the number plate. Toll plazas are being placed to prevent drivers diverting on to lesser roads; it will be impossible to enter the centre without passing a toll point. ***There is still some debate about whether the proceeds should be returned to the public in lower taxes or whether they should all be spent on public transport.*** [emphasis added]

Even in France, where a former president, Georges Pompidou, once justified the construction of a disfiguring urban motorway along the banks of the Seine with the quip that "*les Francais aiment leurs bagnoles*" (the French love their cars), there is now a change of heart. Last August the environment minister was scorched by the press when pollution in cities such as Paris, Lyons and Strasbourg rose to the so-called third level, at which it is generally considered dangerous to many frail people and damaging to the lungs of the population at large. By September, when fine weather produced more smog, the government banned cars from entering Paris on alternate days, according to whether they had odd- or even-numbered license plates, and made public transport free.

It has the powers for such draconian action under a clean-air law passed 18 months ago by the previous administration. One French motorway company, which runs the A1 north of Paris towards Lille, introduced variable pricing, putting up the rate by 25% on Sunday afternoons to reduce the jam of weekenders returning to Paris. The result was a reduction of 15% in traffic with a consequential speeding up of journeys and reduction of jams. Motorway users either changed the time of their travel or changed their route or just traveled less.

Britain and Germany are much less advanced, but both have conducted trials of urban and motorway road pricing. Field trials in Leicester and Stuttgart have sought to establish how high charges must be before motorists are persuaded to leave their car behind and switch to other forms of transport. The Stuttgart trial, involving 400 drivers, yielded promising results, contradicting the view that car travel is relatively immune to price. If that were the case, very high charges would be needed to deter traffic, but the evidence from the preliminary trials is that a charge of DM 15 ($8) would be sufficient to deter significant numbers of drivers from entering inner cities.

Motorway tolling using automated collection techniques has proved easier to sell to voters than urban congestion pricing. [emphasis added] By 2000 at least half the users of Portugal's national toll-motorway network are expected to be using a tag based, non-stop electronic tolling system.

In America, an element of pricing is being introduced to lanes reserved for commuters who share cars. The federal government is spending $14m to encourage such experiments. ***In California, a private company has built two express lanes in the central reservation strip along Route 91 near San Diego. Drivers pay to use this, at a cost of 50 cents off-peak, rising to $2.75 in the rush-hour. Cars carrying more than three people pay nothing.*** [emphasis added] Cars are identified by electronic tags passing roadside transponders. Rule-breakers receive an automatic $15 fine. Users enjoy a saving of 40 minutes compared with driving in the normal lanes along this ten-mile stretch of busy highway. ***Opinion polls before and after the introduction of the scheme showed public acceptance rising from only 40% beforehand to 70% after variable congestion pricing was introduced.*** [emphasis added]

It is no surprise that much of the pressure for urban road pricing has come in crowded city states in Asia. Europe, with a population density four times that of the United States, is also a prime candidate. In one-third of all European cities, the average speed at peak times is 15 kilometers an hour or less. Over 60m Europeans suffer from traffic noise above the level where speech is intelligible and where stress is created by the persistent background roar. In most European cities, the air quality is very poor for at least 20 days a year. ***Cars stuck in traffic pollute three times as much as those purring along motorways, negating the effect of ever-cleaner exhaust emissions brought about by better catalytic converters and cleaner-burning engines.*** [emphasis added]

Estimates of the costs of increasing congestion must be treated with caution. The European Commission, however, has calculated that the external costs of road transport in terms of accidents, infrastructure, environmental pollution and congestion, are 250 billion ecus ($308 billion) a year, which is equivalent to 4% of the EU's GDP. By external costs, it means the costs not directly borne by those incurring them. Half of this 250 billion ecus, says the commission, can be blamed on congested roads.

Congestion and its associated problems are going to get much worse unless something changes. ***Over the next 13 years, the [European C]ommission thinks road freight traffic will grow by 37%, passenger cars by 58%.*** [emphasis added] Most of Europe's people live and work in a densely populated area roughly bounded by London, Paris, Frankfurt and Amsterdam. This is where traffic problems are at their worst.

In the United States, where half the traffic on freeways crawls twice a day during rush hour, the Transportation Research Board and the Federal Highways Administration estimate that, by 2010, traffic congestion on freeways will have quadrupled, making the peaks longer and longer. The time spent in jams will increase by 5.6 billion hours and the cost of delay will increase by $41 billion. One example of the looming chaos: if present trends continued, a one-way 30 minute early-morning commute along Route 1 from New Brunswick, New Jersey, to Trenton, might turn into a five-hour crawl. Long before this, of course, many drivers would turn in despair to alternative forms of transport or simply avoid this journey.

Down with roads

Until the beginning of the 1990s, the solution to rising congestion was seen as simple: predict the growth in traffic and provide extra roads to carry it. Several things have undermined that approach.

First, road construction has become increasingly unpopular with voters, particularly those who live near the path of planned new routes. In Britain, spectacular protests against by-pass highways, led by green activists but supported by tweedy, conservative country dwellers, forced the government to scrap a huge road-building program. In Japan, Tokyo residents succeeded in blocking a noisy new bypass several years ago, and they won the right for noise pollution to be considered when building new roads--for instance, in Kobe, to replace the multi-level structures wrecked in the earthquake two years ago.

Second, economic growth in the 1980s and in the past few years has meant that new roads only briefly relieve congestion. Such is the level of suppressed demand that new roads attract even more traffic. It is now widely accepted that pouring concrete over large areas of the countryside in densely populated countries such as Britain and the Netherlands makes little sense. Professor Phil Goodwin, a transport economist at University College, London, and an adviser to the British government, recently pointed out that lack of space (rather than air pollution, greenhouse gases or the cost of road accidents) means that traffic will have to be limited.

True, other measures short of road pricing could limit traffic after a fashion. Regulation has been used widely. Many European cities ban cars from their central areas, turning them over to pedestrians. Others such as Berlin and Bremen promote car pooling clubs, so that people have access to cars when they really need them but otherwise tend to use public transport. Some 200,000 Germans now belong to such clubs in over 20 cities. Edinburgh city council is trying to import this idea into Britain, and it is also planning a car-free suburb, where residents can move in only if they agree not to have their own car.

Finally there is the burgeoning industry of transport "telematics"--beloved of the car industry because it puts fancy gadgets in cars. The ultimate in road telematics is the automated highway that was demonstrated near San Diego in California this summer. Platoons of cars are linked electronically; transponders in the vehicles talk to beacons by the road which keep them all in lane and properly spaced, allowing the driver to read a book or watch the scenery. A more modest version is being tried out in Europe by Mercedes-Benz. This links several lorries together with an electronic tow-bar so that they can travel closer together at higher speeds, using less road all under the control of the front lorry's driver.

Until such science-fiction stuff becomes a reality, the real benefit of telematics is that its technologies offer a way to implement differential road pricing. At most, the future use of telematics could increase road capacity by little more than 10%, and even then the costs involved for highway authorities and for individuals may not be worth it. In the end telematics may prove better suited to reducing accidents than to squeezing more traffic on to the roads.

All other forms of traffic demand-management amount to variations on command-and-control policies. Raising fuel duties is a blunt weapon which unfairly discriminates against rural motorists. Road pricing is the only method that can replace rationing-by-queueing with precisely directed charges. Even the most modest form of road pricing, tolls used for financing the construction of roads, can help provide extra road space. Once the infrastructure of toll stations is in place, raising charges at peak periods, as the French have done on the A1, could be done more widely.

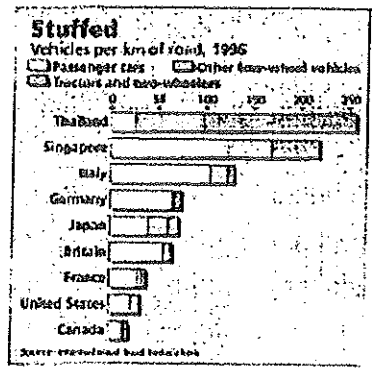
Exhibit 2.6 (Continued)
LIVING WITH THE CAR
The Economist, December 6-12, 1997

Now sell it

Persuading motorists that road pricing is good for them is a task that politicians around the world are only just beginning to take up. The use to which revenues are put is crucial in convincing voters that road pricing makes sense. Borrowing against future revenues allows spending on better public transport to be brought forward so as to coincide with the introduction of road pricing. The success of Norway's city charging schemes shows that it is possible to persuade voters of the merits if they approve of the way the revenues are spent.

Most of the other obstacles to road pricing have been solved by technology, or soon will be. ***Privacy, the issue which forced the cancellation of Hong Kong's road-pricing scheme, is not a problem if drivers use pre-paid smart cards to pay tolls.*** (emphasis added) Such cards are already in use in 15 countries around the world, including Austria, France and Spain. The latest tolling equipment can charge vehicles on multi-lane motorways, even if they switch lanes at high speed. Recording of license plates on camera is required only for vehicles which fail to carry a valid card. Vehicles diverting away from tolled routes on to minor roads are a more difficult problem. But the use of global positioning satellites, combined with in car receivers and digital maps, allows vehicles to be charged wherever they are at rates varying according to the time of day and degree of congestion.

From now on politics, not technology, will dictate the pace of change. Governments around the world are still nervous about the impact of road pricing. But as more and more charging schemes are implemented and the benefits of less congested, unpolluted roads are felt, attitudes will change. ***In 20 years' time, when paying for road space will be regarded as the norm, people will look back and wonder why they were ever prepared to put up with the pollution, noise and paralysis of today's cities.*** (emphasis added)



Singapore's Plan

With incomes per head of $23,000, a population of 3m, and an area of just 650 square kilometers (almost 12,000 people per square mile), Singapore is a very rich, very small country. People want to cruise around in style. Their 370,000 cars (plus 310,000 buses, lorries, vans and motorbikes) translate into 220 vehicles per road-kilometer, one of the highest densities in the world. If nothing were done, the result would be endless jams.

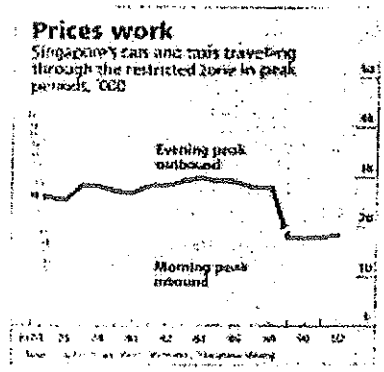
To curb growth in car ownership, Singapore has for many years slapped high customs duties on imported cars and set stiff registration fees and road tax. In addition, anybody buying a new car must get a permit; 40,000 new permits are issued each year. At today's rates they cost between $27,000 and $49,000.

As well as discouraging car ownership, the authorities have also restricted car use. For the past 20 years, to enter the central restricted zone, covering about 7 square kilometers, drivers have had to display a license; a similar license must be shown on the windscreen on the island's three expressways. In each case the tariff is now $2 in the morning peak hour, falling to $1.30 at off-peak times. In 1989 the peak surcharge was extended to the evening rush-hour. That reduced afternoon traffic sharply (see chart) and raised average speeds inside the restricted zone by a fifth. Some drivers have switched to off-peak travel or now take buses or trains; through traffic has declined.

From March next year the license system will be automated with stored-value smart cards. With a built-in microprocessor chip, these can be preloaded to carry credit of up to $150, and can be used for transactions other than traffic tolls. Unlike at traditional pay as-you-go toll plazas, the charging will be done automatically by means of microwave communication between an electronic device in the car (where the smart card is inserted) and an overhead gantry, while traffic moves at speed.

Apart from that advantage, the main difference is that ***motorists will be charged more precisely for their actual contribution to traffic congestion.*** (emphasis added) To avoid congestion surges at the end of expensive peak hours, the authorities may introduce a so-called shoulder pricing system, with a tariff of $2 at 6 pm, $1.50 at 7 pm and $1 at 8 pm. Those who pass a gantry without a valid charge card will have their number plates snapped by video cameras and be fined.

Will this be the complete answer to Singapore's traffic problems? The planners think not. They once considered a plan to build a network of roads underground, but in the end it was the plan that was buried. Now they have shifted their attention to building a world-class public transport system.



3. HOUSING ELEMENT

HOUSING INVENTORY

Housing Count and Vacancy Characteristics: Table 3.1 shows the basic housing data for the City of Miami Springs in comparison to Dade County (the Metropolitan Area). The 1990 Miami Springs non-seasonal vacancy rate of 3.5 percent is lower than the Dade County figure of 8.0 percent. From 1980 to 1990 there was almost no change in the total number of housing units, decreasing from 5,345 in 1980 to 5,342 in 1990. There is reason to believe that the vacancy rate declined following Hurricane Andrew due to the displacement of families from South Dade. However, it is believed that this rate has recently increased as rebuilding efforts ensued in that part of the County.

Housing Tenure: The 1980 Census of Population and Housing indicated that just over 64 percent of the year round housing units were owner occupied. This was a smaller percent than in 1970, but still higher Dade County. Table 3.1 shows that over 63 percent of Miami Springs housing units were owner-occupied in 1990, substantially more than 54.3 percent for Dade County.

Housing Type: Table 3.2 contains the distribution among housing types and shows the predominance of single family structures. Almost 66 percent of the City's units are in single family detached structures as compared to approximately 40 percent in the County as a whole. In 1990, there were only two mobile homes or trailers reported to be in the City of Miami Springs, representing less than a fraction of a percent of the housing distribution. The current distribution of housing types is about the same as in 1980, reflecting the fact that the housing supply has not substantially changed since 1980. The 1980 Census of Population and Housing indicated that single family homes were 66 percent of all housing units, multi family units were 33 percent and duplex units were 1.4 percent. Multi family units are concentrated primarily along South Royal Poinciana Boulevard and near the City of Miami Golf Course, as they were in 1980.

Age of Housing Stock: Miami Springs was developed during the land boom of the 1920's. There are structures in the City that date back to those days. However, the bulk of the housing in the City was built between 1940 and 1960. The 1980 Census of Housing indicated that 66.9 percent of the housing units were built during those two decades. Table 3.3 shows the age of the City of Miami Springs' housing stock. The City of Miami Springs has a larger proportion of its housing stock that is more than forty years old than does Dade County. Approximately 29 percent of Miami Springs housing is over forty years old while only about 12 percent of Dade's housing is in the same age range.

Value of Owner-Occupied Housing: Table 3.4 shows the value of the City and County's housing stock. Ninety percent of the owner-occupied units (2,944) are included in the survey. The median value of Miami Springs' owner-occupied housing stock is $103,700. This is 22 percent higher than the County median of $85,300. The 1990 U.S. Census reported that 461 of the City's units were in condominium ownership; some of these units are rented and many are seasonal. The 1989 Comprehensive Plan reported median value of owner occupied housing units at $64,700, only 13 percent higher than the Dade County median of $57,200.

Financial Characteristics: Table 3.5 outlines the monthly housing costs and income characteristics of households living in the City's owner-occupied units and Table 3.6 does the same for rental units. Over three fourths of the homeowners pay less than 30 percent of their income on housing, the generally accepted maximum percentage. The cost to income ratio in the City is slightly higher than the County as a whole. On the rental side, costs are lower, with the rent to income ratio being 28.3 percent for Miami Springs and 34.2 percent for the County as a whole.

Mobile Homes: There were two mobile homes or trailers enumerated in Miami Springs by the 1990 U.S. Census.

Historically Significant Housing: A list of the historically significant housing is included in the list of historic resources displayed on Table 1.4 of the Land Use Element.

HOUSING ANALYSIS

Household Projections: Table 1.2 in the Future Land Use Element shows the trends and projections relative to households. Dade County projects that the population in the City of Miami Springs will decrease from 13,343 in 1994 to 13,015 in 2005 and eventually 12,646 in 2015. Based on this Dade County population projection and the 1990 Census enumeration of households, Table 1.2 projects a proportional decrease in households ranging from 5,123 in 1994 to 4,997 in 2005 and 4,855 in 2015. Table 3.9 shows projections of households by size based on the total household projection in Table 1.2 and the proportional distribution of households by size enumerated by the 1990 Census. Approximately one third of the households consist of two persons and another one third consists of households of three and four persons. No major shift in this pattern is expected.

Housing Needs: Table 3.10 projects housing need by household income range. Approximately half of the households in the City of Miami Springs are in the high income range, while about 32 percent are in the low to very low income range. This pattern is not expected to change significantly to the year 2015.

Land Requirements for Housing: No ***additional*** land will be needed to accommodate the projected number of households since it is smaller than the existing number of households.

Housing Needs Expected be Filled by the Private Sector: The private sector has created every housing unit in the City of Miami Springs. As stated in the 1989 Comprehensive Plan, "supply meets demand considering the limited amount of vacant land" This observation is both a tautology and axiom of classical economics. It sidesteps the presumption inherent in 9J-5 that the public sector should take action to meet those housing "needs" which are in excess of demand, i.e. those "needs" which low and moderate income households cannot afford to fill under market constraints. Sensibly, the Florida Department of Community Affairs did not try to force communities such as Miami Springs to actually fill this "need."

Improving the Private Sector Housing Delivery Process: The private sector housing process has as its major participants land owners, developers, lenders, contractors and manufacturers. Lawyers, architects, engineers, surveyors, brokers, title and casualty insurers and...municipal officials also play a role. The many participants in the housing delivery process usually coordinate with each other very well. Factors of the housing delivery process upon which the public sector has great influence are: 1) land availability as determine by zoning; 2) substantive and process development regulations; and 3) the availability of essential public facilities. The public sector can facilitate housing delivery by lenient regulations and aggressive provision of public services.

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MEANS FOR ACCOMPLISHMENT (9J-5.010(2)(f)

Provision of Adequate Housing: Rule 9J-5 expects local government comprehensive plans to indicate how the community will provide adequate housing. Miami Springs municipal government can help ensure adequate housing by monitoring the condition of existing housing and by enacting and enforcing an existing housing maintenance code if determined necessary.

Provision of Low and Moderate Income Housing: Rule 9J-5 expects local government comprehensive plans to indicate how the community will provide adequate low and moderate income housing. The 1989 Miami Springs Comprehensive Plan states that "there is no need for public action to generate housing for low and moderate income households." The following courses of action were enumerated as having been considered and rejected: 1) housing trust funds for low interest financing; 2) zoning which requires developers to construct housing units for low and moderate income households; 3) zoning which provides incentives to construct housing units for low and moderate income households; 4) public land banks; 5) more lenient area and bulk zoning regulations; 6) more lenient building code regulations; 7) impact fee waivers; 8) fast-track development order processing; 9) municipal financing of not-for-profit developers; 10) participation in an area-wide housing finance authority. There is no hard data which clearly indicates the need or desirability for Miami Springs to pursue any of the above previously rejected approaches.

Elimination of Substandard Housing: The 1989 Housing Element observed that the small number of substandard homes was not of "pressing concern." The data and analysis reported that the City intended to carefully monitor housing conditions and enforce code requirements. Monitoring housing conditions is an ongoing necessity in a community with an old housing stock like that in Miami Springs.

Improvement of Housing Aesthetics: Housing aesthetics are regulated with area and bulk restrictions. No other aesthetic regulations were deemed to be within the appropriate purview of the City, according to the 1989 Comprehensive Plan Housing Element. There is no hard data which clearly indicates the need or desirability for Miami Springs to pursue any of the above previously rejected approaches.

Housing Conservation and Rehabilitation: Conservation and rehabilitation are private market functions in Miami Springs. The City's role is limited to setting code standards for housing maintenance.

Shimberg Center Housing Needs Assessment

State Law: To facilitate the preparation of housing element updates and to focus more on affordable housing, the legislature revised Chapter 163 of the Florida Statutes in 1993, establishing a uniform methodology and data source for housing elements. The revision of the Florida Statutes states:

> To assist local governments in housing data collection and analysis and assure uniform and consistent information regarding the state's housing needs, the state land planning agency shall conduct an affordable housing needs assessment for all local jurisdictions on a schedule that coordinates the implementation of the needs assessment with the evaluation and appraisal reports required by s. 163.3191. Each local government shall utilize the data and analysis from the needs assessment as one basis for the housing element of its local comprehensive plan. The agency shall allow a local government the option to perform its own needs assessment, if it uses the methodology established by rule. (Ch. 163.3171 (6) (f) 2. F.S. 1993)

To help prepare the methodology for the affordable housing needs assessment, the Florida Department of Community Affairs contracted with the Shimberg Center for Affordable Housing at the University of Florida, in June 1995. The charge in developing the methodology was to base it on readily available statewide data sources, provide flexibility, and allow for the inclusion of locally generated data. A single methodology was needed that could be used in cities below 2,500 population and in unincorporated areas of counties, as well as in cities such as Miami and Tampa.

Housing Inventory: The first step in the Shimberg methodology is to assess the existing housing inventory, using inventory data from the most recent decennial Census (in our case, 1990). The inventory, or supply side analysis, includes: total housing inventory (the total number of occupied and vacant units); housing units by type (single family, multi-family, mobile home); housing units by tenure (owned or rented); rental housing units by gross rent levels; owner housing units by value ranges; housing by age of unit; monthly costs of owner-occupied housing units; rental housing distributed by rent-to-income ratios for households at different income levels; owner housing distributed by cost-to-income ratios for households at different income levels.

Housing Demand: The second step in the Shimberg methodology is to estimate and project housing demand expressed as households by tenure, by size, and by income. Demand includes the projected total demand for housing units and also the projected demand for units by type, tenure, cost and rent ranges, and size of household, and for the elderly.

Housing Need: The third step in the Shimberg methodology is to estimate and project the need for housing net of the estimated and projected demand for units against the updated supply. The ultimate result of the analysis is the distribution of the need for housing units, by household income and by value or rent of units. For each income range, a range of affordable house prices and of affordable rents is calculated. For each range, the numbers of owner and of renter households are estimated and projected for 1995, 2000, 2005, and 2010. The number of housing units in each value or rent range in 1995 is also calculated. The preliminary surplus/deficit of units in each income range each year is therefore reported as the difference between the number of households whose maximum affordable unit is in that range and the number of 1995 housing units, by rent or price, in that range.

Sources of Error: The methodology for affordable housing needs assessment provides population estimates and projections, but these may not be the same as the projections the local government uses throughout its plan. For areas that grew rapidly during the base period, projection errors tend to be greater when the exponential technique is used. The shift and share techniques are less appropriate for areas that lost population during the base period, as they produce negative projections for areas whose population decline may have resulted from a unique event. Accuracy is compromised if the methodology is used for very long-term population projections. Studies have commonly found that projection errors tend to increase with the length of the time horizon. The estimates and projections are largely based on a community's current needs and past trends, so they take no account of fair share criteria for allocating regional housing needs across communities. The assessment does not create a schedule for removing substandard units from the housing inventory. The Census data generally show a very low rate of unit inadequacy and are heavily influenced by the definition of overcrowded.

Treatment of Existing Assisted Housing Units: Tenants occupying public housing and other subsidized units for which there is no market rent are assumed to report the actual rent that they pay, so those units are reflected in the data. Tenants receiving Section 8 or other assistance to meet the market rent for their units should, theoretically, report the total or market rent, not the portion that they pay. Therefore, Section 8 and related units are not reflected in the data reported. The demand-side assistance column in the table provides a place for the jurisdiction to

enter any tenant subsidy assistance provided with federal, state or local funds. (One basis for this number is the subsidized housing inventory reported earlier.) Similarly, the supply-side assistance column records housing units that have received construction or rehabilitation subsidies bringing in rents lower than the market rent specified to a tenant, or that have lowered the cost to a homeowner below the market value of a unit.

Affordability Tables: The final affordability tables which result from the Shimberg methodology are structured to show the housing units available in 1995 distributed by price or by rent, and the households in 1995, 2000, 2005 and 2010 distributed by income. The tables array units and households so that the number of units affordable in a given income range can be compared to the number of households in that income range. The surpluses or the deficits of units affordable in each income range are then calculated. These tables are the culmination of the analysis.

Shimberg and DCA Observations: Analysts at the Shimberg Center and the Florida Department of Community Affairs have published observations that they believe are important in considering the utility of the Shimberg Estimates. Some of these observations are quoted below:

> First, the affordability analysis may over-estimate the number of owner households with affordability problems. The analysis assumes that households are moving into a housing unit today and paying today's price. Thus, the method does not account for long term residents who have paid off a mortgage or who have a lower monthly payment than they would if buying the house new today. In addition, households wealthy enough to buy a house with a substantial down payment are not reflected in the income statistics. As households age, they accumulate equity and may be less likely to move; the changing age distribution is another potentially important indicator of home buying capability that is not incorporated in the model. Finally, some have argued that the factor used to convert income into an affordable housing price, 2.11, is too low and should be larger, for example, 2.5 or 3.0.
>
> Second, the analysis uses the HUD standard that a household paying more than 30 percent of its income for housing has a housing affordability problem. However, households may choose to pay more than 30 percent of their income for housing rather than to live in one of the units that costs less; in other words, they may undertake to buy or rent homes out of their price or rent ranges as these are shown in the table. Such households have an affordability problem as defined by the standard, yet their situation may not call for a public policy response.
>
> Third, the construction of the table, with affordability based on the highest income in the range and the corresponding highest price or rent, may distort the number of households with affordability problems to the extent that the distribution of households differs from the distribution of units, particularly in the lowest income ranges with income increments of $5,000. Further, the table does not account for household size, which is an important issue in pairing households to rental units. Our expectation is that larger units in general have higher rents than smaller units, so that large households must pay more for a unit. (One method to assess this situation is to examine the extent of overcrowding in the jurisdiction.) Depending on the specific situation, an overcount or undercount may result. Information we have received suggests that in a number of communities, there is an undercount of the renter households that have trouble finding affordable housing.
>
> Fourth, the distribution of units by price or rent includes all housing units, and thus substandard ones. In some jurisdictions, the prevalence of substandard units may be a larger problem than affordability (i.e. the affordable units may be substandard). The affordability table does not now reflect that possibility.
>
> The most salient issue is the desire by communities to have a single number designate the housing need in a given year. The affordability tables yield a number, but it is subject to the caveats described above. Our preference would be for communities to think of the data being

provided as available for local manipulation and interpretation; in other words, the data constitute a tool to be used as one component in preparing a jurisdiction's housing element, but in concert with local definitions and understanding of housing issues. It is virtually impossible to reach a single number of housing need, because that number is subject to the definitions employed and the methods used to derive it; any of several approaches might be taken.[18]

Shimberg Center Findings for Miami Springs

Tables 3.12 shows that the Shimberg Center sees a 1995 surplus of housing units for owner-households with an income between $37,000 and $75,000, and a surplus of units for renter-households with an income between $12,500 and $27,500. The Shimberg Center sees a 1995 shortage of housing units for owner-households with an income up to $37,000 and a shortage of units for renter-households with an income up to $12,500. The Shimberg Center methodology projects these surpluses and shortages as holding virtually steady through the year 2010.

Table 3.13 shows that the Shimberg Center sees a 1995 cumulative deficit of 671 housing units for owner-households with incomes up to 80 percent of median. The Shimberg Center sees a 1995 cumulative shortage of 335 housing units for renter-households with incomes up to 50 percent of median. However, the Shimberg Center sees a cumulative surplus of 309 housing units for renter households with incomes up to eighty percent of median. This signifies that the surplus of units for households in the fifty to eighty percent of median income category is 644 units. The Shimberg Center methodology projects these surpluses and shortages as holding virtually steady through the year 2010. The 671 shortage of owner-type units for households with incomes of up to 80 percent of median income represents about 20 percent of the total number of owner-occupied units in Miami Springs. The 335 shortage of renter-type units for households with incomes of up to 50 percent of median income represents about 18 percent of the renter-occupied units.

Addressing the Needs of Very Low Income Households

The 1989 comprehensive plan for Miami Spring was required to address the needs of low and moderate income households. Because of a subsequent change in Florida statutory and administrative code law, the de novo comprehensive plan adopted on first reading on June 23, 1996 is required to also address the needs of very low income households. Providing housing for more than a small percentage of the very low income households is not within the realm of real possibility for any municipality in Dade County, or elsewhere. Planning studies for other communities have noted this. For example, the 1995 City of Miami Beach Consolidated [Housing] Plan draft indicated that in 1990 there were 12,365 extremely low income households in the City and only 3,425 apartments affordable to them. It is impossible to imagine a transfer of wealth that could be carried out at the federal, state or local level that would prove adequate housing for very low-income households. The 1995 Miami Beach Consolidated Plan states "To cover this Consolidated Plans' three year timeframe for the 0-30% of median income renter households, an estimated $32.8 million in rental assistance is needed...per year with almost $36 million needed to repair all of the substandard or overcrowded units." The Miami Beach Consolidated Plan goes on to note that,

> Both federal and state assisted construction/rehab efforts for rental housing fail to serve this income group successfully. This lack of success is due in large part to the failure to collect enough rent from developments targeted to those 30% or below to even cover operating costs....The City will continue to support efforts to assist these households, but recognizes that the sheer costs of addressing the numbers of households in need is beyond its resources.

[18] Noll, Paul F; O'Dell, William; Smith, Marc T.; and Sullivan, James. "Florida's Affordable Housing Needs Assessment Methodology," *APA Journal*, Volume 63, Number 4, Autumn 1997, pages 505-506.

Table 3.1
Housing Unit Count and Tenure, 1990

	Miami Springs		Dade County	
	Units	Percent	Units	Percent
Total Number of Units	5,342	100.0	771,288	100.0
Vacant Seasonal	63	1.2	19,062	2.5
Year Round Housing	5,279	98.8	752,226	97.5
Vacant Year Round Housing	185	3.5	59,871	7.8
Occupied Housing Units	5,094	95.4	692,355	89.8
Owner-Occupied Housing Units	3,237	63.5	375,912	54.3
Renter-Occupied Housing Units	1,857	36.5	316,443	45.7

Source: U.S. Census Bureau, CH-2-11 Detailed Housing Characteristics, 1990.

Table 3.2
Type of Housing Units, 1990

	Miami Springs		Dade County	
	Units	Percent	Units	Percent
Single Family Detached	3,520	65.9	311,519	40.4
Single Family Attached	96	1.8	74,453	9.7
Duplex	66	1.2	22,444	2.9
Multifamily	1,608	30.1	333,598	43.3
Mobile Home or Trailer	2	0	18,543	2.4
Other	50	1.0	10,731	1.4
Total	5,342	100.0	771,288	100.0

Source: U.S. Census Bureau, CH-1-11 General Housing Characteristics, 1990.

Table 3.3
Age of Housing Stock, 1990

	Miami Springs		Dade County	
Year Structure was Built	Units	Percent	Units	Percent
1989 to March 1990	-	-	21,401	2.8
1985 to 1988	89	1.7	67,801	8.8
1980 to 1984	176	3.3	81,631	10.6
1970 to 1979	392	7.3	210,085	27.2
1960 to 1969	1,176	22.0	147,084	19.1
1950 to 1959	1,976	37.0	148,133	19.2
1940 to 1949	1,204	22.5	57,897	7.5
1939 or earlier	329	6.2	37,256	4.8
Total	5,342	100.0	771,288	100.0

Source: U.S. Census Bureau, CH-2-11 Detailed Housing Characteristics, 1990.

Table 3.4
Value of Owner-Occupied Housing Units, 1990

Value Range	Miami Springs Units	Miami Springs Percent	Dade County Units	Dade County Percent
Less than $50,000	34	1.2	23,870	8.7
$50,000 - $99,999	1,337	45.4	154,195	56.0
$100,000 - $149,999	1,141	38.8	52,723	19.2
$150,000 - $199,999	318	10.8	18,764	6.8
$200,000 - $299,999	91	3.1	13,841	5.0
$300,000 or more	23	0.7	11,905	4.3
Total Reporting	2,944	100.0	275,298	100.0

Source: U.S. Census Bureau, CH-1-11 General Housing Characteristics, 1990.

Table 3.5
Financial Characteristics of Households in Owner-Occupied Units, 1990

	Miami Springs Units	Miami Springs Percent	Dade County Units	Dade County Percent
Specified Owner-Occupied Housing Units	3,009	100.0	281,713	100.0
Median Income	$40,875	NA	$36,917	NA
With a Mortgage	2,030	67.5	223,902	79.5
Median Monthly Cost	$892	NA	$796	NA
Cost-Income Ratio	NA	26.2	NA	25.9
Not Mortgaged	979	32.5	57,811	20.5
Median Monthly Cost	$303	NA	$241	NA
Cost-Income Ratio	NA	8.9	NA	7.8
Monthly Owner-Occupied Housing Costs As a Percentage of Income:				
Less than 20 Percent	1,514	50.9	132,179	47.4
20 - 29 Percent	750	25.2	68,732	24.6
30 - 34 Percent	149	50.0	19,063	6.8
35 Percent or More	563	18.9	59,059	21.2
Total Households Reporting	2,976	100.0	279,033	100.0

Note: Not all households reported their income. Cost-income ratio is based on median cost and median income

Source: U.S. Census Bureau, CH-2-11 Detailed Housing Characteristics, 1990.

Table 3.6
Financial Characteristics of Households in Renter-Occupied Housing, 1990

Gross Rent	Miami Springs Units	Miami Springs Percent	Dade County Units	Dade County Percent
Renter-Occupied Units	1,857	100.0	314,632	100.0
Less than $250 Per Month	25	1.4	33,816	10.8
$250 - $499960	51.7	124,557	39.6	
$500 - $749685	36.9	111,401	35.4	
$750 - $999131	7.1	25,363	8.1	
$1,000 or more	24	1.3	12,817	4.1
No Cash Rent	32	1.7	6,678	2.1
Median Rent	$492	NA	$493	NA
Median Income	$20,866	NA	$17,305	NA
Rent-Income Ratio	NA	28.3	NA	34.2
Gross Rent As a Percentage of Income:				
Less than 20 Percent	517	27.8	65,707	20.9
20 - 24 Percent	237	12.8	39,843	12.7
25 - 29 Percent	162	8.7	35,962	11.4
30 - 34 Percent	193	10.4	28,636	9.1
35 Percent or More	663	35.7	127,383	40.5
Not Computed	85	4.6	17,101	5.4
Total Households Reporting	1,857	100.0	314,632	100.0

Note: Rent-income ratio is based on median rent and median income.

Source: U.S. Census Bureau, CH-2-11 Detailed Housing Characteristics, 1990.

Table 3.7
Building Permit Activity Since 1990
Miami Springs

Year	Permit Type	Units
1990	Single Family	5
	Multifamily	0
1991	Single Family	5
	Multifamily	0
1992	Single Family	3
	Multifamily	0
1993	Single Family	2
	Multifamily	11
1994	Single Family	4
	Multifamily	0
Total Permits		30

Source: University of Florida, Bureau of Economic and Business Research, "Building Permit Activity in Florida - Final Report," 1990, 1991, 1992, 1993, 1994.

Table 3.8
Internal Condition of Housing Stock Summary, 1990

Condition	Miami Springs Units	Miami Springs Percent	Dade County Units	Dade County Percent
Lacking Complete Plumbing for own use	110	2.8	6,017	0.8
Lacking Complete Kitchen Facilities	48	1.2	6,899	0.9
Overcrowded (more than 1 person per room)	596	15.2	16.3	125,870
Lacking Central Heating	*	*	*	*
Total Housing Units	3,918	100.0	771,288	100.0

Note: Items marked by an asterisks (*) were not available in the 1990 Census nor other publications consulted.

Sources: U.S. Census Bureau, CH-1-11 General Housing Characteristics, 1990. U.S. Census Bureau, CH-2-11 Detailed Housing Characteristics, 1990.

Table 3.9
Projections of Households by Size
Miami Springs

Persons Per Household	1990	1994	2000	2005	2010	2015
1	1,344 1)	1,353	1,332	1,319	1,303	1,282
2	1,660 1)	1,670	1,644	1,629	1,609	1,583
3 and 4	1,595 1)	1,603	1,578	1,564	1,545	1,520
5 or more	495 1)	497	489	485	478	470
Total	5,094 1)	5,123 2)	5,043 2)	4,997 2)	4,935 2)	4,855 2)

Sources: (1) U.S. Census Bureau, CH-1-11 General Housing Characteristics, 1990. (2) Table 1.2. Household size distribution for 1994 through 2015 based on projection of households from Table 1.2 and 1990 size distribution.

Table 3.10
Projections of Households by Income Category
Miami Springs

Income Group	1990	1994	2000	2005	2010	2015
Very Low Income						
Less than $13,455	810	815	802	795	785	772
Low Income						
$13,456 - $21,527	815	819	806	799	789	776
Moderate Income						
$21,528 - $25,564	344	346	341	338	334	328
Middle Income						
$25,565 - $32,290	575	578	569	564	557	548
High Income						
$32,291 and over	2,550	2,565	2,525	2,501	2,470	2,431
Total Households	5,094 1)	5,123 1)	5,043 1)	4,997 1)	4,935 1)	4,855 1)

Sources: 1) Table 1.2

Methodology: The income categories in this table are defined by HUD as follows:

Very Low Income	0 - 50 percent of County median
Low Income	51 - 80 percent of County median
Moderate Income	81 - 95 percent of County median
Middle Income	96 - 120 percent of County median
High Income	121 percent and over of County median

According to CPH-5-11, Table 9, the 1990 Dade County median household income was $26,909. Multiplying this median by the income category definitions given above results in the following definition of income categories for Dade County:

Very Low Income	Less than $13,456
Low Income	$13,456 - $21,527
Moderate Income	$21,528 - $25,564
Middle Income	$25,565 - $32,290
High Income	$32,291 and over

Table 82 from CH-2-11 gives the number of households in various income ranges which are different from those above. The number of households in each of the above income ranges can be interpolated from the ranges given in CH-2-11, Table 82. The interpolation produces the following distribution:

Income Category	Households	Percentage
Very Low Income	810	15.91
Low Income	815	15.99
Moderate Income	344	6.76
Middle Income	575	11.28
High Income	2,550	50.06
Total Households	5,094	100.00

Table 3.11
Summary Tape File 1A
1990 Census of Population and Housing
Florida, Dade County, Miami Springs and Component Census Tracks Table 3.11

DATA	STATE OF FLORIDA	DADE COUNTY	CITY OF MIAMI SPRINGS	CT 47.01	CT 47.02	CT 47.03
Total population	12,937,926	1,937,094	13,268	5,135	5,765	4,580
SEX						
Male	6,261,719	928,411	6,368	2,449	2,874	2,141
Female	6,676,207	1,008,683	6,900	2,686	2,891	2,439
AGE						
Under 5 years	849,596	139,714	832	325	357	280
5 to 17 years	2,016,641	328,296	1,972	792	910	593
18 to 20 years	522,755	82,000	436	160	218	138
21 to 24 years	692,902	111,876	615	201	291	243
25 to 44 years	3,927,400	609,719	4,376	1,637	1,896	1,563
45 to 54 years	1,291,611	212,098	1,437	566	639	505
55 to 59 years	588,552	91,769	719	291	339	226
60 to 64 years	679,038	90,816	740	344	318	207
65 to 74 years	1,369,652	146,131	1,229	545	521	372
75 to 84 years	789,669	94,556	620	207	219	268
85 years and over	210,110	30,119	292	67	57	185
Median age	36.4	34.2	37.5	38.3	36.2	38
Under 18 years	2,866,237	468,010	2,804	1,117	1,267	873
Percent of total population	22.2	24.2	21.1	21.8	22	19.1
65 years and over	2,369,431	270,806	2,141	819	797	825
Percent of total population	18.3	14	16.1	15.9	13.8	18
HOUSEHOLDS BY TYPE						
Total households	5,134,869	692,355	5,094	1,941	2,246	1,780
Family households (families)	3,511,825	481,263	3,466	1,453	1,484	1,104
Married-couple families	2,791,734	342,515	2,675	1,179	1,124	797
Percent of total households	54.4	49.5	52.5	60.7	50	44.8
Other family, male householder	171,535	35,377	208	58	112	79
Other family, female householder	548,556	103,371	583	216	248	228
Nonfamily households	1,623,044	211,092	1,628	488	762	676
Percent of total households	31.6	30.5	32	25.1	33.9	38
Householder living alone	1,309,954	172,164	1,344	404	640	550
Householder 65 years and over	591,468	69,425	458	172	199	142
Persons living in households	12,630,465	1,904,375	12,974	5,123	5,765	4,298

Table 3.11 (Continued)
Summary Tape File 1A
1990 Census of Population and Housing
Florida, Dade County, Miami Springs and Component Census Tracks Table 3.11

DATA	STATE OF FLORIDA	DADE COUNTY	CITY OF MIAMI SPRINGS	CT 47.01	CT 47.02	CT 47.03
Persons per household	2.46	2.75	2.55	2.64	2.57	2.41
GROUP QUARTERS						
Persons living in group quarters	307,461	32,719	294	12	0	282
Institutionalized persons	173,637	20,111	282	0	0	282
Other persons in group quarters	133,824	12,608	12	12	0	0
RACE AND HISPANIC ORIGIN						
White	10,749,285	1,413,015	12,282	4,911	5,303	4,150
Black	1,759,534	397,993	250	28	98	148
Percent of total population	13.6	20.5	1.9	0.5	1.7	3.2
American Indian, Eskimo, or Aleut	36,335	3,066	21	8	7	8
Percent of total population	0.3	0.2	0.2	0.2	0.1	0.2
Asian or Pacific Islander	154,302	26,307	261	78	113	94
Percent of total population	1.2	1.4	2	1.5	2	2.1
Other race	238,470	96,713	454	110	244	180
Hispanic origin (of any race)	1,574,143	953,407	5,549	1,650	2,813	2,206
Percent of total population	12.20	49.20	41.80	32.10	48.80	48.20
Total housing units	6,100,262	771,288	5,342	2,017	2,360	1,878
OCCUPANCY AND TENURE						
Occupied housing units	5,134,869	692,355	5,094	1,941	2,246	1,780
Owner occupied	3,452,160	375,912	3,237	1,559	1,271	853
Percent owner occupied	67.2	54.3	63.5	80.3	56.6	47.9
Renter occupied	1,682,709	316,443	1,857	382	975	927
Vacant housing units	965,393	78,933	248	76	114	98
For seasonal, recreational, or occasional use	417,670	19,062	35	4	9	24
Homeowner vacancy rate (percent)	3.5	2.	1.2	1	0.7	1.7
Rental vacancy rate (percent)	12.4	9.1	5.3	6.6	6.2	3.6
Persons per owner-occupied unit	2.49	2.9	2.67	2.74	2.71	2.61
Persons per renter-occupied unit	2.39	2.57	2.33	2.24	2.38	2.24
Units with over 1 person per room	297,557	125,870	596	140	317	238

Table 3.11 (Continued)
Summary Tape File 1A
1990 Census of Population and Housing
Florida, Dade County, Miami Springs and Component Census Tracks Table 3.11

DATA	STATE OF FLORIDA	DADE COUNTY	CITY OF MIAMI SPRINGS	CT 47.01	CT 47.02	CT 47.03
UNITS IN STRUCTURE						
1-unit, detached	3,032,769	311,519	3,520	1,673	1,386	945
1-unit, attached	335,798	74,453	96	25	39	53
2 to 4 units	462,438	51,387	255	76	175	103
5 to 9 units	320,580	41,405	255	52	174	46
10 or more units	1,127,629	263,250	1,164	202	570	700
Mobile home, trailer, other	821,048	29,274	52	9	16	31
VALUE						
Specified owner-occupied units	2,378,207	275,298	2,944	1,434	1,144	748
Less than $50,000	433,121	23,870	34	6	21	10
$50,000 to $99,000	1,239,055	154,195	1,337	572	726	355
$100,000 to $149,000	381,899	52,723	1,141	631	262	299
$150,000 to $199,000	151,452	18,764	318	183	82	64
$200,000 to $299,999	100,648	13,841	91	35	42	15
$300,000 or more	72,032	11,905	23	7	11	5
Median (dollars)	$77,100	$86,500	$103,700	$109,700	$91,400	$101,200
CONTRACT RENT						
Specified renter-occupied units paying cash rent	1,591,461	305,935	1,796	358	949	907
Less than $250	261,349	45,729	46	17	17	16
$250 to $499	892,383	161,174	1,291	218	776	649
$500 to $749	355,636	79,694	399	94	137	224
$750 to $999	49,428	11,757	51	23	17	17
$1,000 or more	32,665	7,581	9	6	2	1
Median (dollars)	$402	$422	$423	$427	$410	$432
RACE AND HISPANIC ORIGIN OF HOUSEHOLDER						
Occupied housing units	5,134,869	692,355	5,094	1,941	2,246	1,780
White	4,457,493	533,832	4,763	1,879	2,094	1,617
Black	553,561	120,321	100	8	38	62
Percent of occupied units	10.8	17.4	2	0.4	1.7	3.5
American Indian, Eskimo, or Aleut	13,088	949	13	3	4	6
Percent of occupied units	0.3	0.1	0.3	0.2	0.2	0.3

Table 3.11 (Continued)
Summary Tape File 1A
1990 Census of Population and Housing
Florida, Dade County, Miami Springs and Component Census Tracks **Table 3.11**

DATA	STATE OF FLORIDA	DADE COUNTY	CITY OF MIAMI SPRINGS	CT 47.01	CT 47.02	CT 47.03
Asian or Pacific Islander	42,895	8,012	67	17	33	28
Percent of occupied units	0.8	1.2	1.3	0.9	1.5	1.6
Other race	67,832	29,241	151	34	77	67
Hispanic origin (of any race)	510,849	319,803	1,825	520	911	774
Percent of occupied units	9.9	46.2	35.8	26.8	40.6	43.5

Sources: 1990 U.S. Census of Population and Housing
Miami Springs Planning Department

Table 3.12

Miami Springs

Surplus/Deficit of Affordable Occupied Units
(households minus units, positive number means deficit of affordable units)

Household Income Range		Owner-occupied Units				Renter-occupied Units			
		1995	2000	2005	2010	1995	2000	2005	2010
$0	$5,000	97	99	99	101	170	174	175	175
$5,000	$10,000	138	141	136	127	198	206	209	213
$10,000	$12,500	96	93	90	89	74	80	81	81
$12,500	$15,000	84	86	80	74	-68	-71	-72	-73
$15,000	$17,500	72	72	68	64	-191	-192	-192	-191
$17,500	$20,000	99	92	89	89	-367	-375	-377	-374
$20,000	$22,500	115	111	108	106	-139	-139	-136	-130
$22,500	$25,000	107	99	101	108	-94	-89	-95	-98
$25,000	$27,500	123	126	124	123	-24	-31	-29	-23
$27,500	$30,000	89	85	90	98	38	30	34	38
$30,000	$32,500	76	74	80	89	65	61	58	55
$32,500	$35,000	72	72	75	75	16	18	21	20
$35,000	$37,500	15	17	19	23	37	42	38	31
$37,500	$40,000	-19	-19	-22	-25	7	15	15	13
$40,000	$42,500	-111	-110	-112	-113	280	274	269	268
$42,500	$45,000	-120	-118	-110	-103				
$45,000	$47,500	-149	-144	-143	-145				
$47,500	$50,000	-87	-83	-75	-66				
$50,000	$55,000	-266	-258	-254	-250				
$55,000	$60,000	-320	-321	-318	-309				
$60,000	$75,000	-306	-303	-300	-290				
$75,000	$100,000	59	75	78	80				
$100,000	$125,000	74	74	72	71				
$125,000	$150,000	0	-1	-2	-2				
	$150,000+	60	63	66	68				
	Total	-2	22	39	82	2	3	-1	5

CUMULATIVE - Surplus/Deficit of Affordable Occupied Units
(households minus units, positive number means deficit of affordable units)

Owner-occupied Units				Renter-occupied Units			
1995	2000	2005	2010	1995	2000	2005	2010
97	99	99	101	170	174	175	175
235	240	235	228	368	380	384	388
331	333	325	317	442	460	465	469
415	419	405	391	374	389	393	396
487	491	473	455	183	197	201	205
586	583	562	544	-184	-178	-176	-169
701	694	670	650	-323	-317	-312	-299
808	793	771	758	-417	-406	-407	-397
931	919	895	881	-441	-437	-436	-420
1,020	1,004	985	979	-403	-407	-402	-382
1,096	1,078	1,065	1,068	-338	-346	-344	-327
1,168	1,150	1,140	1,143	-322	-328	-323	-307
1,183	1,167	1,159	1,166	-285	-286	-285	-276
1,164	1,148	1,137	1,141	-278	-271	-270	-263
1,053	1,038	1,025	1,028	2	3	-1	5
933	920	915	925	2	3	-1	5
784	776	772	780	2	3	-1	5
697	693	697	714	2	3	-1	5
431	435	443	464	2	3	-1	5
111	114	125	155	2	3	-1	5
-195	-189	-175	-135	2	3	-1	5
-136	-114	-97	-55	2	3	-1	5
-62	-40	-25	16	2	3	-1	5
-62	-41	-27	14	2	3	-1	5
-2	22	39	82	2	3	-1	5

Table 3.13

Miami Springs

Cumulative Surplus/Deficit of Affordable Occupied Units by Income Category
(households minus units, positive number means deficit of affordable units)

Income Categories		Owner-occupied Units				Renter-occupied Units			
		1995	2000	2005	2010	1995	2000	2005	2010
30% of median	$8,073	190	194	190	184	297	307	310	313
50% of median	$13,455	372	376	363	351	335	349	353	355
80% of median	$21,527	671	664	641	622	-309	-303	-299	-286
120% of median	$32,291	1,089	1,071	1,058	1,061	-336	-344	-342	-325
200% of median	$53,818	422	426	433	454	2	3	-1	5

4. SANITARY SEWER, SOLID WASTE, DRAINAGE, POTABLE WATER and NATURAL GROUNDWATER AQUIFER RECHARGE ELEMENT

SANITARY SEWER SERVICE

Provision of Sewer Service

The Miami Dade Water and Sewer Authority (WASA) processes sanitary wastes generated in Miami Springs. The wastes are collected from individual properties in Miami Springs by a collection system owned and maintained by the City of Miami Springs. The Miami Springs collection system serves the entire City. It also serves 12 homes and 22 commercial accounts in Virginia Gardens and the Baker Aviation School, which is on Le Jeune Road south of N.W. 36th Street in unincorporated Dade County, but which is surrounded on three sides by properties incorporated into Miami Springs.

The City collection system is connected to a WASA interceptor at N.W. 20th Street. According to the 1989 Comprehensive Plan, the City collection system was upgraded in 1975 with a 14.6 million dollar revenue bond. This upgrade gave the collection system a three million gallon capacity. This three million gallon capacity accommodated 1989 demand and provided about a one million gallon surplus. The surplus accommodated the expansion of the service area attendant to the 1984 annexation of land south of 36th Street and it was expected to be able to accommodate any increase in development intensity foreseeable under 1989 development regulations.

Post, Buckley Schuh & Jernigan, Inc. has prepared a *Manifolding of Pumping Stations Wastewater System* study, dated May of 1995. The purpose of the study was to obtain preliminary cost figures for improvements to the wastewater system and provide an overall plan to modernize the system with new equipment, instead of only replacing failing elements and making emergency repairs. The study noted that the existing system was built in the 1970's and that most of the pumping stations have obsolete equipment. The study also noted that the existing system is a repump system. A repump system is one in which a pump station receives wastewater from a contributing area by gravity sewer lines and then pumps the wastewater into an adjacent subsystem. The receiving sub-system "repumps" the received wastewater into another sub-system along with the waste water which has been collected by gravity from its own area. In a repump system, if a pump fails the failure affects its own gravity service area plus all the gravity service areas the sewage from which it is designed to repump. The study proposed that the system be converted to a manifolded system. In a manifolded system, each pump station pumps its contributing flow into a continuous discharge pipeline (force main) which collects the flows from each pumping station and no flow is repumped. If a pump station fails the gravity area served by that station is the only area affected by the failure. The study evaluated eight options and recommended one projected to cost $1,553,300.

Sewer Generation and Treatment Capacity Reported in 1989

The 1989 plan identified three WASA sewage treatment plants: the North District Plant, the Central District Plant (Virginia Key) and the South District Plant. The plan reported that all three were available to process Miami Springs wastes. Together these plants had a 1988 capacity of 276 million gallons per day (MGD). According to the 1989 plan, these plants were operating at 85 percent of capacity, *i.e.* 234 million gallons per day. (However, the 1995 Dade County EAR indicated that the plants were operating at about capacity in 1988.) The three plants were expected to increase their combined capacity to 414 MGD by 1993 and to 450 MGD by 1998.

The 1989 Sanitary Sewer Element reported sanitary "waste generated by City" at 1.2 MGD in 1988. This amounted to 86 gallons per capita per day based on a population of 13,949. Dade County generated sewage waste at the rate of 181 gallons per capita per day in 1988, according to Dade County's 1995 EAR. The Miami Springs plans did not indicate the source of its local sewage generation estimate of 1.2 million gallons per day. It did say that sewage generation was estimated based on 10 gallons per capita per day (at page 5.4), but such a factor is inconsistent

with the experience of Dade County as a whole and with commonly published per household consumption figures.

Miami Springs' 1989 Sanitary Sewer Element said that Miami Springs' 1.2 MGD of sewage waste amounted to 0.01 percent of the 276 million gallon per day capacity of Dade County's three treatment plants; however, 1.2 million gallons is actually 0.4 percent of a 276 million gallon capacity. Miami Springs' sewage generation for 1998 was projected as 1.3 MGD which was expected to be 0.28 percent of the 450 MGD capacity projected for 1998.

Current and Projected Sewer Generation

The 1994 capacity of the three Dade County treatment facilities was 298-318 million gallons per day (MGD) according to Table VII-9 of the 1995 Dade County Infrastructure Element EAR. The Dade County EAR projected the 1995 capacity to be 353 million gallons per day. Miami Springs customers generated 892,217,700 gallons of sewage in FY 1994. This amounted to 2.44 million gallons of sewage per day for all Miami Springs customers and 183 gallons per capita per day based on a 1994 population of 13,343. Miami Springs' 2.44 million gallons per day of sewage generation amounted to eight-tenths of one percent of the 318 million gallon Metropolitan Dade County plant capacity. Miami Springs' sewage generation for 2005 is projected to be about the same 2.44 MGD as in 1994, which will be six-tenths of one percent of the 380.5 MGD capacity projected for 2005 and seven-tenths of one percent of the 331.6 MGD minimum capacity called for in Table VII-12 of the 1995 Dade County Infrastructure EAR.

1998 Miami Springs Sewer System Evaluation Survey

Post, Buckley, Schuh & Jernigan, Inc. has prepared a Sewer System Evaluation Survey (SSES), dated March, 1998. The consultant summarized the findings of the survey as follows:

> The City discharges an average of 4,190 gpm ("gpm" = gallons per minute) of untreated wastewater flow to the Miami-Dade Water and Sewer Department ("MDWASD") for treatment and disposal. Of this amount, 1,105 gpm is actual sewage flow. The remainder (3,085 gpm) reasonably represents the total infiltration and inflow ("I/I") into the City's sewer system. This amount of I/I costs the City approximately $2.75 million annually in electrical and MDWASD treatment and disposal expenses.
>
> The City desires to make repairs to its sewer collection and transmission system in order to mitigate I/I and thus save money associated with transporting and disposing of this additional flow.
>
> The City has recently addressed and mitigated 578 gpm of this I/I (i.e. 578 gpm of the 3,085 gpm has been resolved). Based upon our cost benefit analysis, we recommend spending $1.75 million on I/I repairs and additional I/I investigations as soon as practicable to address an additional 1,301 gpm of I/I as follows:

Sleeve 98 Lines	$1,175,450
4 Point Repairs	29,000
268 Lateral Repairs	75,040
Television Inspections	138,843
Engineering	40,000
Contingency (20%)	291,667
Total	$1,750,000

These repairs are estimated to take approximately six months from start to completion.

These repairs will result in a significatn reduction of I/I into the City's sewer system which will, in turn, result in lower operating (including, for example, electrical costs) and MDWASD sewerage treatment and disposal expenses. PBS&J estimates these savings will be in the following amounts (expressed in nominal dollar amounts compared to the constant-historical I/I benchmark of 3,085 gpm) during the following fiscal years ending September 30:

Fiscal Year	Savings from Reduction in I/I vs. 3,085 gpm
1998-1999[19]*	$1,003,342
1999-2000	899,510
2000-2001	792,995
2001-2002	683,663
2002-2003	571,372
2003-2004	455,975
2004-2005	337,317
2005-2006	215,234
2006-2007	89,556
Total	$5,048,964

We also prepared an analysis of the potential result of not mitigating any of the 3,085 gpm of I/I, whatsoever. If the repairs to the sewer system are not performed and the current level of I/I is, in turn, not reduced, then the sewer system will continue to deteriorate and the magnitude of I/I will likely continue to increase in the future. We estimate that the economic difference between doing the recommended I/I repairs now versus doing no I/I repairs whatsoever (expressed in nominal dollar amounts compared to future I/I costs if the I/I repairs are not done) is as follows:

Fiscal Year	Loss of Savings If No Repairs Are Made
1998-1999*	$1,140,619
1999-2000	1,180,927
2000-2001	1,225,759
2002-2003	1,329,912
2003-2004	1,389,718
2004-2005	1,455,023
2005-2006	1,526,102
2006-2007	1,603,244
Total	$12,126,646

We have attached, as Exhibit A, our analysis of doing the I/I repairs outlined above versus doing no I/I repairs whatsoever. Please see Exhibit A for more detailed information regarding the two tables presented immediately above.

PBS&J also recommends that the City spend $200,000 each year in ongoing sewer system investigation, rehabilitation, and maintenance to minimize future, potential I/I problems. The savings

[19] Assuming the I/I repairs are fully implemented by October, 1998, which is the first day of fiscal year 1998/1999.

outlined in both charts on Page 2 herein above will be reduced by this $200,000 per year expenditure.

Additionally, PBS&J recommends that the City perform the force main manifolding improvements outlined in the 1995 report prepared by PBS&J at this time. The total estimated cost of the manifolding project, including the new force mains, pump station upgrades, engineering and contingency is $1.8 million.

If the City wishes to issue municipal bonds to implement these improvements, the following is the aggregate amount of money required to perform the work:

I/I Repairs	$1.75 million
Force Main Manifolding	1.80 million
Total Expenditure	$3.55 million

POTABLE WATER

Provision of Potable Water

The Miami Dade Water and Sewer Authority (WASA) provides potable water for Miami Springs. The water was provided to individual properties in Miami Springs by a distribution system owned and maintained by the City of Miami Springs. The City distribution system is connected to a WASA main. The City distribution system was upgraded prior to 1989 to correct fire flow deficiencies in the area from Curtiss Parkway to Le Jeune Road between N.W. 36th Street and Oakwood Drive. The 1989 Comprehensive Plan, noted that the "Public Works Department is...engaged in replacing outdated two-inch water supply lines with four-inch lines." This was being done on an *ad hoc* basis as new development provided opportunities and in response to specific problems. This process is ongoing as of 1995. The City's water distribution system supplies 12 homes in Virginia Gardens and all of the City north of N.W. 36th Street, i.e. it does not extend to the area east of Le Jeune Road and south of N.W. 36 Street. This excluded area is the area that was annexed in 1984.

WASA's nearby Hialeah and John Preston Water Treatment Plants are providers of water to Miami Springs. In 1989, these plants together had a capacity of 190 million gallons per day (MGD). They were expected to increase their capacity to 200 MGD by 1998. The Hialeah and Preston plants were served by 55 on-site wells and 45 wells at the Northwest Wellfield site. As of 1989, the South Florida Water Management District had approved withdrawal allocations of 150 MGD from the on-site wells and 216 MGD from the Northwest Wellfield site. However, contamination at the Hialeah and Preston wells resulted in limits on the amount of their water that could be used. In 1987 only 10 MGD could be used from the Hialeah/Preston wells. This was mixed with 148 MGD from the Northwest Wellfield to achieve a blend that did not exceed acceptable levels of contaminants.

Potable Water Consumption and Treatment Capacity Reported in 1989

The 1989 Potable Water Element reported "water used by City" at 1.2 million gallons per day in 1988. This amounted to 86 gallons per capita per day based on a population of 13,949. Dade County water at the rate of 198 gallons per capita per day in 1988, according to Dade County's 1995 EAR. The Miami Springs 1989 Potable Water Element did not indicate the source of its water use estimate of 1.2 million gallons per day.

Miami Springs' 1989 Potable Water Element said that the 1.2 million gallons of potable water used by the City amounted to 0.01 percent of the 190 million gallon per day capacity of Dade County's Hialeah and John Preston treatment plants; however, 1.2 million gallons is actually 0.6

percent of a 190 million gallon capacity. Miami Springs' water use for 1998 was projected as 1.3 MGD which was expected to be 0.65 percent of the 200 MGD capacity projected for 1998. Miami Springs' water use for 1998 was projected as 1.3 MGD which was expected to be 0.65 percent of the 200 MGD capacity projected for 1998.

Current and Projected Potable Water Consumption

There is adequate potable water capacity for current population and certainly for the future population, which is expected to be less than the current population. The Miami Dade Water and Sewer Authority (WASA) provides potable water for Miami Springs. The water was distributed to individual properties by a system owned and maintained by the City of Miami Springs. WASA's nearby Hialeah and John Preston Water Treatment Plants are the providers for Miami Springs. These plants had a 1994 capacity of 225 million gallons per day (MGD) according to Table VII-8 of Dade County's 1995 Infrastructure EAR. The Dade County 1995 EAR does not give a projected capacity for the Hialeah-Preston Plants, but it projects overall water system capacity to increase by about 25 percent between 1995 and 2005 from 421 MGD to 501 MGD. Miami Springs used 1,128,849,216 gallons of potable water in FY 1994. This amounts to 3.09 million gallons per day and 232 gallons per capita per day based on a 1994 population of 13,343. Miami Springs' 3.09 million gallons per day of water consumption amounted to 1.4 percent of the 225 million gallon plant capacity. Miami Springs' water consumption for 2005 is projected to be about the same 3.09 MGD as in 1994, which will be six-tenths of one percent of the 501 MGD total system capacity projected for 2005 in Table VII-10 of the 1995 Dade County Infrastructure EAR. The City's 232 gallons per capita per day is high in comparison with surrounding communities according to the Florida Department of Community Affairs Objections, Recommendations and Comments Report on the June 23. 1997 first reading version of the City's de novo comprehensive plan. If this comment is correct, the reason may be due to the proportion of hotels and other non-residential land uses in the City which consume water, but do not add permanent population. It is expected that the City will likely have as many or more hotels in the future.

SOLID WASTE

Sanitation collection services are provided on a bi-weekly basis by the Miami Springs Public Works Department. Waste is transported to the Dade County controlled 58th Street Resource Recovery Plant which incinerates and recycles the solid waste. The burning process generates electricity. The 58th Street Plant serves the highly populated areas of north and central Dade County, including Miami, Miami Beach and Hialeah.

County wide, just under 9 pounds per person per day were generated in 1990 according to data in Tables VII-15 and VII-16 of Dade County's 1995 EAR. Generation comes from households, businesses, institutions and other uses. The 9 pounds per person per day rate averages all of these sources. Many communities which do not have major business, institutional and other non residential sources generate rates substantially below 9 pounds per person per day. Rates of 5 or 6 pounds per person per day are common. According to tipping figures provided by the Miami Springs Public Works Department, Miami Springs generates less than 4.5 pounds per person per day. This figure is supported by data reported in a 1994 *Water, Wastewater and Solid Waste Rate Study* prepared for the City of Miami Springs by Hartman & Associates.

The level-of-service standard established in the 1988 Dade County Comprehensive Plan was a five year capacity based on a total waste generation of 7 pounds per person per day. The Dade County 1995 EAR recognized that: 1) per person generation rates were changing based on new Florida statutory requirements, and 2) some communities previously served by Dade County would obtain solid waste disposal on the private market. Accordingly, the 1995 Dade County EAR observed that a new solid waste level of service standard should be set. It did not recommend what that standard should be. Planners at the Florida Department of Community Affairs

have indicated to the author of this report that communities should assure adequate solid waste disposal capacity for the planning period.

DRAINAGE

General Background

Observations of Miami Springs City Officials as of 1989: The 1989 Comprehensive Plan noted that areas adjacent to Westward Drive from Morningside to the Circle were on positive drainage systems. Other areas were drained by French drains and injection wells which served specific basins. As of 1989, it was City policy that new drainage facilities be of the infiltration type rather than the positive drain type. In addition, it was City policy to replace positive drains into lakes with infiltration facilities. The 1989 Comprehensive Plan observed that "With the use of infiltration pits, pollutants are partially removed by natural soil filtration processes." In 1989, public and private drainage facilities in Miami Springs were believed to be adequate, with the exception of a few small scattered areas which experience temporary flooding during severe storm events. Since the City was (and is) largely developed, it was anticipated that the drainage system existing in 1989 would be adequate to serve the City's drainage needs during the planning period.

Findings and Observations of the Dade County EAR: The 1995 Dade County EAR noted that the 1988 Metropolitan Dade County Conservation, Aquifer Recharge and Drainage Element Support Components included a Figure 18 entitled "Flood Prone Zones." This map was based upon the professional "judgment "of staff from the South Florida Water Management District, the Dade County Public Works Department and Dade County's Department of Environmental Resource Management. Flood prone zones were delineated based on the fact that many of the older drainage canals had been designed for 100 year floods at a time when there was much less urbanization in their drainage basins than at the present time.

DERM Study of 5-Year Criteria in 25-Year Storm: In 1994, the staff of the Dade County Department of Environmental Resource Management produced a study to determine how well the "current one in five year criterion works during a twenty-five year storm." The study evaluated how well an on site drainage system designed to accommodate six inches of rainfall in 24 hours would operate with nine inches of rainfall in 24 hours. The study concluded that there would be 75 minutes of ponding on site during the 25 year storm, but that adequate flood protection would be provided during the 25 year storm. However, 0.23 acre feet of stormwater would overflow from a "typical" developed single family house lot during the first 24 hours of the 25 year storm. This water would flow into the secondary and primary canal drainage systems, and ultimately into coastal waters.

Design Capacity and Required Level of Service: The Florida Department of Environmental Regulations (DER) stormwater rule (Chapter 17-25 *FAC*) requires the detention of the first one inch of rainfall. DER has delegated stormwater permit responsibility to the South Florida Water Management District (SFWMD) which in turn delegated it to the County Department of Environmental Resources Management (DERM). DERM has a more restrictive policy of requiring full retention if feasible; otherwise the one inch rule applies.

NPDES Study: In order to identify storm water needs, some cities in Dade are currently participating in an ongoing Storm Water System Improvements Master Plan study. This study is being carried out in coordination with DERM's efforts to prepare all required documentation to meet the NPDES permitting requirements of the Environmental Protection Agency as articulated in Chapter 24 of the Dade County Code and Chapter 403, *FS*. The study is in a very early

phase; the consultant for the study is in the process of identifying drainage basins that require detailed modeling and analysis and no laboratory testing is scheduled as of the fall of 1994. It is expected that the study will eventually result in the identification of environmentally detrimental discharges, which are herein defined to be any discharges which contain hazardous pollutants as set by the Environmental Protection Agency pursuant to the Clean Water Act.

1995 Assessment of Local Stormwater Conditions

Stormwater Utility: Notwithstanding the sanguine view of the 1989 Comprehensive Plan with respect to stormwater, the City has established a Stormwater Utility to fund studies and design stormwater improvements and to develop a Capital Improvement Program to lessen or alleviate flooding problems.

Stormwater Management Masterplan: The City retained the firm of Post, Buckley, Schuh & Jernigan to develop a *Stormwater Management Masterplan.* A final report was completed in May, 1995. The plan process inventoried existing drainage and incorporated a computer model that identified problem areas. Alternatives to solving flood problems were identified. The study noted that the City experiences periodic flooding due to a combination of geological conditions and an inadequate stormwater conveyance systems.

Geological Conditions: Historically, most of Miami Springs existed below minimum flood elevations established for houses, roads and buildings by Dade County. Large portions of the City were swamp lands; extensive areas were covered with muck layers. In some parts of the City the muck layers are interspersed with layers of very pervious sand. Underlying the sand and muck layers is a formation of porous coral rock with depths varying from 10 to 15 feed below ground. This coral rock has the capacity to move large volumes of groundwater. As the roads and buildings within the City were developed, organic material was removed and replaced with crushed limestone up to appropriate elevations. The crushed limestone was typically placed only under roads and buildings. Yards, swales and open areas were generally not demucked and often not filled. The organic material left in place is not very pervious and allows a low rate of seepage of stormwater into the ground. Areas of the City that do not have muck layers beneath them generally have good infiltration. In these areas, the depth of groundwater is the main determinant of the ability of the ground to percolate stormwater, with higher groundwater levels allowing for less seepage. The groundwater is naturally high. During the recent past, pumping by the Dade County Water and Sewer Authority probably lowered groundwater around the well sites enough to significantly improve stormwater percolation. This is no longer the case because of pumping restrictions on the wells in Miami Springs.

Existing Storm Drainage System and Related Determinants: According to the stormwater management plan, the City has inadequate stormwater conveyance capacity. The City's stormwater systems consist of infiltration trenches, French drains, soakage pits, storm sewers, open channels and stormwater pumps. Much of the City has no specific conveyance system but relies on surface drainage and infiltration into the ground. High tailwater levels in the Miami River Canal may be limiting the ability of portions of the existing conveyance system to discharge stormwater at an adequate rate. Flat topography slows stormwater flows into the conveyance system. There is partial and, in some cases, complete blockage of the positive drainage systems with sediment, debris and/or rubble The permeability of swales has been reduced over the years by compacting from automobile parking and by the accumulation of fine material from top soil.

Stormwater Management Masterplan Recommendations: Thirty-eight drainage basins were identified. For each drainage basin, data was collected on total basin acreage, impervious area, pervious area, pond area and soil types. The study recommended construction of a positive outfall drainage system for five of the 38 basins (Basins 14, 19A, 19B, 32 and 38) and the con-

struction of an underdrain system for two of the basins (Basins 15 and 17A). Total construction, contingency and engineering costs were estimated at $1,966,378. The study said the work could be done at one time or phased. If phased, the following phases were suggested: 1) Basin 17A ($21,200); 2) Basin 32 ($652,000): 3) Basins 19A & 19B ($210300): 4) Basin 14 ($525,900): 5) Basin 15 ($94,700); and 6) Basin 38 ($462,200). The subject basins are shown in Figure 4.1.

Stormwater Outfalls: The Stormwater Management Masterplan identified six stormwater outfalls. (See Appendix items PD-51, PD-59, PD-60, PD-61, PD-62 and PD-73.) A determination as to the need for comprehensive laboratory testing of pollutant loads could be made. There may be a need for trapping and filtration. Trapping and filtration devices reduce point-source pollution, However, as required by EPA mandate, the City does incorporate with all new storm sewer improvement projects devices to reduce point source pollution.

Absence of Additional Water Quantity and Quality Information: The Post, Buckley, Schuh & Jernigan stormwater study noted that no local, state or Federal reports on water quantity and/or quality in the Miami Springs area were discovered. "The only work discovered was the FEMA effort for the Flood Insurance Program.

NATURAL GROUNDWATER AQUIFER RECHARGE

The Dade County Wellfield Protection Program is countywide in scope and jurisdiction and includes the City of Miami Springs in its regulatory coverage. Nearly all of Miami Springs was within the 210 day travel time impact contour surrounding the Hialeah-Miami Springs Wellfields. The balance of Miami Springs fell within the Maximum Day Protection Area. The dividing line was approximately along De Leon Drive, with the area to the west being in the 210 day travel time and the area to the east being in the Maximum Day Protection Area. The 210 day travel time contour represents the line from which it will take a molecule of water 210 days to migrate to the well during maximum draw down and no recharge.

5. CONSERVATION ELEMENT

Surface Water: The inland surface waters in Dade County are composed of canals and residential lakes. Both owe their form to dredge, fill and drainage operations. The major waterways were channeled from former natural streams which crossed the Rockland Ridge to Biscayne Bay. Maintenance and operation of the major canals is the responsibility of the South Florida Water Management District. The major canals are interconnected with a network of secondary canals. These secondary canals are the County drainage system and which is maintained by Dade County. Three canals run through or adjacent to Miami Springs: 1) the Miami River Canal; 2) the Ludlam Canal and the Melrose Canal. The Miami River Canal was originally constructed in 1910 as one of the major works of the Everglades Drainage District. According to the Areawide Water Quality Management Plan quoted in the 1989 Miami Springs Conservation Element, the Miami River was "grossly polluted and...a potential health threat to the (Hialeah-Miami) Springs Well Field." A major cause of the pollution was the use of the facility for waste water disposal. The 1989 Miami Springs Comprehensive Plan saw a pollution threat to the Ludlam Canal from "future developments along its western bank" on which sat in 1989 Florida East Coast Railroad operations and Metropolitan Dade County Transit Improvement Program (Metrorail) operations. The Melrose Canal was not seen to be significantly threatened by pollution.

Water Supply: The Biscayne Aquifer is a "sole source" water supply for south Florida. This shallow aquifer underlies all of Dade County, much of Broward County and a small portion of southeast Palm Beach County. The 1989 Miami Springs Comprehensive Plan noted that the Biscayne Aquifer "...is more than adequate for present needs...," but population growth and permeable area shrinkage were identified as possible future causes of demand exceeding supply [at current or otherwise desirable prices]. The 1995 Dade County Conservation Element EAR does not give a clear indication as to the accuracy of this judgment. It does indicate that the water supply afforded by the Biscayne Aquifer requires protection in order to ensure that it continues to function well into the future. Figure 16 of Dade County's 1988 Conservation, Aquifer Recharge and Drainage Element Support Components delineated prime aquifer recharge areas based on several USGS studies. These areas had not previously been delineated. The 1995 Dade County Conservation Element EAR notes that most undeveloped wetland areas in Dade County are designated for environmental protection or open land on the County's Land Use Map. The Bird Drive, North Trail and East Turnpike Basins are wetland areas that are within the urban Development Boundary, but other wetland protection areas are outside. The Dade County Department of Environmental Resource Management has developed regulations which require that wetland sites within the Urban Development Boundary be developed with a retention area amounting to 30 percent of the site. In 1994, the National Audubon Society proposed that a buffer be constructed along the eastern edge of the water conservation areas and the expanded boundary of the Everglade National Park. This concept, called the East Coast Buffer plan, was evaluated by the South Florida Water Management District as part of its ongoing Lower East Coast (LEC) Water Supply Planning Project.

Water Quality: Salt water intrusion and pollutants threaten the Biscayne Aquifer. Salt water intrusion is a threat during drought when the fresh water table is low. Salt water intrusion is a threat when storms and tides drive salt water upstream, a problem that is curbed by salinity control structures. The 1989 Comprehensive Plan identifies the main sources of water pollution as industrial and domestic waste, surface water runoff from both agricultural and urban areas and older septic tanks. The 1989 Comprehensive Plan identifies two major tools for protecting water quality: 1) the Dade County 1982 Potable Water Supply Well Protection Ordinance which restrict the use of land in the well field cone of influence; and 2) the Dade County ordinance which requires retention of the first inch of runoff on site.

Hazardous Waste: No hazardous waste are known to be generated in hazardous quantities in the Miami Springs. However, Figure VI-3 of the Dade County Conservation Element EAR shows "Potential Sources of Contamination from Underground Storage Tanks." Several tanks are

shown in and near Miami Springs. Figure VI-4 shows "Hazardous Waste Remediation Sites and Landfills. There are five sites which are located in or near Miami Springs. Figure VI-5 indicates "Active Petroleum Cleanup Systems in Dade County." There are two or three sites which are either in or near Miami Springs.

Flood Protection: In 1989, Federal Flood Hazard Boundary Maps put Miami Springs in the "6 and 6.5 foot baselines" for 100 year floods. Street centerlines and lots must be filled at least to these baselines. Most of Miami Springs lies between 7.3 and 8.3 feet above mean sea level. The lowest lying areas have elevations between 5.3 and 6.3 feet, and would thus require approximately one foot of fill to comply with the flood criteria. Miami Springs enforces these requirements. In addition, the City of Miami Springs requires first floor elevations be 12 inches above the crown of the road.

Air Quality: The 1989 Comprehensive Plan quoted the Florida Air Implementation Plan as follows: "the atmosphere of Florida has generally been considered clean." The 1995 Dade County EAR makes the same observation, saying that "...Dade County has better air quality than most other major metropolitan areas in the nation." This is due to meteorological conditions which contribute to the natural diffusion and to the self-cleaning capacity of the atmosphere. The relative absence of topographic constraints helps keep the wind blowing. The relatively good quality of Miami Springs air in 1989 was documented by an air monitoring station located on Westward Drive in Miami Springs. The 1989 Comprehensive Plan cited the City's tree canopy as an asset in overcoming potential air quality degradation from the airport. Figure VI-1 of the Dade County Conservation Element EAR shows no air monitoring station in Miami Springs. That figure shows 14 stations. Station 32 is located at 7050 N.W. 36th Street near Miami Springs. Station 11 is the next nearest station, located in Hialeah at 251 East 47th Street. The stations measure ozone, carbon monoxide, particulate matter, sulfur dioxide, nitrogen dioxide and lead. County-wide there were very few instances when these materials were found to exceed established standards, according to the Dade County 1995 EAR. The stations near Miami Springs (Stations 11 and 34) were typical. The only measurements in excess of standards at these stations occurred on one occasion in 1984 and two in 1987 when particulate was found to exceed the standard at 7050 N.W. 36th Street. Since 1988 particulate matter exceeded the established standards once "west of the Miami International Airport" and twice in Homestead, according to the Dade County 1995 EAR. The Dade County 1995 EAR also noted one instance of ozone exceeding established standards; that instance occurred "in NW Dade County in 1990."

Topography and Soils: Dade County soils are generally classified as sands, marls, rockland and organic soils, including peat and muck. Soils encountered in Miami Spring are sandy soils of the Dade and Davie series: Dade fine sand, Davie fine sand and Davie mucky fine sand. They are shallow to a moderate depth and are characterized by a rapid infiltration rate (initially 5 to 7.5 inches/hour). Some pockets of organic substances have remained in the areas covered by the Davie mucky fine sand, but are not significant enough to influence the overall drainage characteristics. Lowland soil types, such as marls and peats are limited in Miami Springs; they are found outside the City's western boundaries and touch the City at one location only. Valuable mineral resources in Dade County include only limestone and sand which are derived from Dade Active Limestone, Dade Inactive Limestone and Dade Inactive Sand. The 1989 Comprehensive Plan noted that none of the sixty mines operating in Dade County were in Miami Springs.

Noise: The 1989 Comprehensive Plan defined noise as undesirable sound. It noted that urban noise was particularly problematic in south Florida where outdoor living is a year around possibility. There are two main sources of noise in Miami Springs: 1) the Miami International Airport and 2) the Florida East Coast Railroad yard. According to a Dade County Aviation Department study quoted in the 1989 plan, "significant noise exposure" occurs only in a 100-food strip along the southern border of the City. Affected land uses in this strip were considered "compatible with the airport activities..." The FEC Railroad yard presented more serious noise

problems, particularly since it lies adjacent to Miami Springs residential development. FEC noise was curtailed by: 1) Florida law, which prohibits the sounding of train horns between 10:00 PM and 6:00 AM; and 2) a wall between the FEC tracks and the adjacent residential neighborhood. The wall is 15 feet high and 3,000 feet long. It was constructed by the FEC in response to a petition from the City of Miami Springs. Noise concerns are the same in 1995 as in 1989. [Dade County Aviation Department will have up-dated information re: new east west runway late fall]

Current and Projected Potable Water Consumption: There is adequate potable water capacity for current population and certainly for the future population, which is expected to be less than the current population. The Miami Dade Water and Sewer Authority (WASA) provides potable water for Miami Springs. The water was distributed to individual properties by a system owned and maintained by the City of Miami Springs. WASA's nearby Hialeah and John Preston Water Treatment Plants are the providers for Miami Springs. These plants had a 1994 capacity of 225 million gallons per day (MGD) according to Table VII-8 of Dade County's 1995 Infrastructure EAR. The Dade County 1995 EAR does not give a projected capacity for the Hialeah-Preston Plants, but it projects overall water system capacity to increase by about 25 percent between 1995 and 2005 from 421 MGD to 501 MGD. Miami Springs used 1,128,849,216 gallons of potable water in FY 1994. This amounts to 3.09 million gallons per day and 232 gallons per capita per day based on a 1994 population of 13,343. Miami Springs' 3.09 million gallons per day of water consumption amounted to 1.4 percent of the 225 million gallon plant capacity. Miami Springs' water consumption for 2005 is projected to be about the same 3.09 MGD as in 1994, which will be six-tenths of one percent of the 501 MGD total system capacity projected for 2005 in Table VII-10 of the 1995 Dade County Infrastructure EAR. The City's 232 gallons per capita per day is high in comparison with surrounding communities according to the Florida Department of Community Affairs Objections, Recommendations and Comments Report on the June 23. 1997 first reading version of the City's de novo comprehensive plan. If this comment is correct, the reason may be due to the proportion of hotels and other non-residential land uses in the City which consume water, but do not add permanent population. It is expected that the City will likely have as many or more hotels in the future. Future water consumption is likely to be at least 232 gallons per capita per day times the projected population. This function combined with the population projections in Table 1.1 would produce a need for 3.047 million gallons per day in the year 2000; 2.952 million gallons per day in 2005; 2,982 million gallons per day in 2010; and 2.934 million gallons per day in 2015.

6. RECREATION and OPEN SPACE ELEMENT EXHIBIT 1

RECREATION INVENTORY

Existing Public Facilities in the City: Recreational facilities on public land and accessible to the general population of the Miami Springs are depicted on Figure 1.1, Existing Land Use Map. The key numbers on that map correspond to the following list:

1. ***Cinema Park (City Tennis Courts)***
   401 Westward Drive

   Size: 1.0 acres
   Facilities: Five lighted tennis courts; lighted handball court
   Type: Community

2. ***Circle Park***
   Curtiss Parkway at Miami Springs Circle

   Size: 1.6 acres
   Facilities: Passive park
   Type: Neighborhood

3. ***Crane Park***
   Quail Avenue and North Royal Poinciana Blvd.

   Size: 1.0 acres
   Facilities: Passive park
   Type: Neighborhood

4. ***De Leon Park***
   De Leon Drive

   Size: 0.3 acres
   Facilities: Passive park with benches
   Type: Neighborhood

5. ***East Drive Field (Stafford Park)***
   East Drive and Labaron Drive

   Size: 9.2 acres
   Facilities: Lighted baseball; lighted softball; lighted soccer; lighted VITA course; tot lot; picnic area
   Type: Community

6. ***Prince Field***
   1400 Westward Drive

   Size: 3.6 acres
   Facilities: Football; baseball; softball; soccer; track; tot lot; 1,535 sq. ft. field house
   Type: Community

7. ***Ragan Park***
   Labaron Drive between Lee Drive and Ragan Drive

   Size: 1.0 acres
   Facilities: Passive park
   Type: Neighborhood

8. ***Recreation Center***
   1401 Westward Drive

   Size: 3.6 acres
   Facilities: Indoor gymnasium; swimming pool; administrative office
   Type: Community

9. ***Rio Vista Drive Park***
   Rio Vista Drive and North Royal Poinciana Blvd.

   Size: 0.6 acres
   Facilities: Passive Park
   Type: Neighborhood

10. ***South Bass Lake Park***
    Bluebird Avenue South to lake

    Size: 0.5 acres
    Facilities: Passive park
    Type: Neighborhood

11. ***Dove Avenue Park/Peany Field***
    North Royal Poinciana Blvd. and Dove Drive

    Size: 5.8 acres
    Facilities: Playing fields
    Type: Community

Canal Bank, Parkway & Traffic Islands

12. ***Canal Bank of C-6 Miami Canal Dove Avenue to Redbird Avenue***

    Size: 2.1 acres

13. ***Parkway at Azure Way***

    Size: 0.2 acres

14. ***Traffic Island at Corydon Drive & Lenape (pump station)***

    Size: 0.1 acres

15. ***Traffic Island / Triangle at Hunting Lodge Drive, Lenape Drive, Melrose Canal***

    Size: 0.4 acres

16. ***Traffic Island / Triangle at Lake Drive & Morningside Drive***

    Size: 0.1 acres

17. *Traffic Island at North Royal Ponciana Blvd. & Starling Avenue*

Size: 0.4 acres

18. *Yacht Basin (Outgoing Bridge)*

Size: 0.9 acres

Total Community Park Acreage:	***23.2 Acres***
Total Neighborhood Park Acreage:	***4.5 Acres***
Total Canal Bank, Parkway and Traffic Island:	***4.2 Acres***
Total of all Park Acreage:	***32.0 Acres***

City of Miami Springs Golf Club: The City of Miami Springs Golf Club occupies approximately 176.5 acres of Miami Springs.

Additional Open Space: Additional open space facilities exist within platted road rights-of-way. These include the center parkway of Curtiss Parkway, which includes a bike path flanked by rows of live oaks, the area between the Canal Street pavement and the C-6 Canal, including the improved passive park area east of the bus shelter, and traffic circles at Beverly Drive and Whitethorn Drive, Beverly Drive and Glendale Drive, South Drive and Pinecrest Drive, and DeSoto Drive and Labaron Drive.

RECREATION ANALYSIS

Local Recreation and Open Space Level of Service Standard: Apart from the Golf Club, which was acquired from the City of Miami in 1998, Miami Springs has 32.0 acres of community and neighborhood recreation and open space. This **32.0 acres** of community and neighborhood recreation and open space amounts to **2.40 acres per 1,000** permanent population, based on the 1994 permanent population (see Table 1.1) and **2.35 acres per 1,000** permanent population, based on the projected 2015 population (see Table 1.1). These ratios are just slightly above the minimum standard of two acres per 1,000 people established by Objective 3 of the Recreation and Open Space Element of the 1988 Comprehensive Plan. By way of comparison, Dade County has established a level of service standard of 2.75 acres of local recreation and open space per 1,000 population. It counts as local recreation and open space parks which are commonly called local and regional parks. It also counts one half of the private recreation and open space within the county.

7. INTERGOVERNMENTAL COORDINATION

DIVISION of AUTHORITY for MUNICIPAL SERVICES

The City of Miami Springs provides the following municipal services:

Police Protection
Land Use Control
Solid Waste Collection
Waste Water Collection
Potable Water Distribution
Water and Sanitary Sewer Administration and Maintenance
Parks and Recreation
Local Street Construction, Maintenance and Lighting
Municipal Code Enforcement
Beautification, Including Tree Preservation
Designation of Historic Architecture

Other municipal services are provided by Metropolitan Dade County under the authority of its Home Rule Charter. These include:

Fire Suppression and Rescue Services
Solid Waste Disposal
Waste Water Treatment
Potable Water Pumping and Purification
Storm Drainage

FORMAL INTERGOVERNMENTAL AGREEMENTS

Miami Springs has entered into ***intergovernmental agreements*** with the following agencies for the purposes stated:

Dade County Public Library System: The City provides maintenance and utility services to the Miami Springs Branch of the County Library System.

Dade County School Board: The City allows the School Board to use City recreational facilities including the municipal swimming pool school purposes. The School Board allows the use of school facilities for public meetings and sporting events.

Dade County: The City coordinates with Dade County in the provision of police and emergency services. The City also cooperates with other local governments.

Miami-Dade Water and Sewer Authority Department: WASA provides potable water and sewage treatment and disposal.

Village of Virginia Gardens: Miami Springs provides potable water and sanitary sewer services to Virginia Gardens.

Village of Virginia Gardens/Town of Medley: The City acts as coordinator, provides facilities and provides in-kind services for an area-wide senior citizens' program in which Virginia Gardens and the Town of Medly participate.

PRIMARY INTERGOVERNMENTAL RELATIONSHIPS

Miami Springs has its most important intergovernmental relationships pertaining to planning with the following agencies for the purposes stated:

Metropolitan Dade County Aviation Department / Miami International Airport: The City participates in airport planning activities.

Metropolitan Dade County Public Works Department, Highway Division: The City cooperates with the Dade County Public Works Department pertaining to the maintenance of County roads within the City. County roads include Curtiss Parkway (4 lane divided County Collector), North Royal Poinciana Boulevard (2 lane county collector), South Royal Poinciana Boulevard (2 to 4 lane county collector), Lenape Drive (2 lane county collector) and Ludlam Road (2 lane county collector).

Metropolitan Dade County Office of Community and Economic Development (OCED): The Office of Community and Economic Development is a branch of the Office of the County Manager. OCED administers the following programs which relate to Miami Springs: 1) the Community Based Organizations Program; 2) the Chapter 163 Redevelopment and Tax Increment Financing Program; and 3) the Community Development Block Grant (CDBG) Program. The ***Community Based Organization Program*** allocates County General Fund monies to special interest groups that do good works. Many of the recipients are private community-based organizations. Under this program, Miami Springs has received financing for economic development related studies. The ***Chapter 163 Redevelopment Program*** "coordinates" redevelopment efforts of all municipalities in Dade County. The Under state law, local units of government are empowered to acquire private land through eminent domain and resell it for private use in order to achieve redevelopment, which is deemed a sufficient public purpose to justify the use of eminent domain. Under the Dade County Charter, local units of government in Dade County forfeit their redevelopment authority to Dade County. They may get it back for specific redevelopment activities by making application to the County. The applications are processed by the OCED. Tax Increment Financing Programs are also administered by OCED. The ***Community Development Block Grant Program*** (CDBG) allocates Federal Community Development Block Grant funds to municipalities in the County. There is too little poverty in Miami Springs to permit the City to participate in the Community Development Block Grant Program. However, the City allows OCED to count the Miami Springs population in preparing its CDBG Program.

Metropolitan Dade County Department of Planning, Development and Regulation: Miami Springs officials consult with the Department of Planning, Development and Regulation in order to coordinate the Miami Springs Comprehensive Plan with the Metropolitan Dade County Comprehensive Development Master Plan, particularly with respect to level of service standards. Miami Springs officials also consults with the Department of Planning, Development and Regulation in the administration of the Miami Springs building code, which is based on the Dade County Building Code; consultations focus on questions pertaining to interpretations of the building code and amendments to the building code. Finally, Miami Springs officials coordinate with this Department of Planning, Development and Regulation pursuant to the plat review and approval process.

Florida Department of Transportation: The City cooperates with the planning and design services which FDOT provides for state roads in and near the City. State roads which affect the City include the Airport Expressway (6 lane divided limited access state principal arterial), N.W. 36th Street (6 lane divided state principal arterial), Le Jeune Road (5 lane state principal arterial) and Okeechobee Road (4 lane state principal arterial).

South Florida Water Management District: The SFWMD is responsible for maintenance and operation of the Miami River Canal and other flood control measures.

Miami Springs/Virginia Gardens Miami International Airport Ad Hoc Committee: This committee is composed of elected officials of Miami Springs and Virginia Gardens. Others also participate. It meets monthly to coordinate the efforts of the two cities aimed at ensuring that the airport will be the best neighbor possible to the adjacent municipalities. Noise abatement is a particular concern of the committee.

OTHER INTERGOVERNMENTAL RELATIONSHIPS

Miami Springs has other intergovernmental relationships with the following agencies for the purposes stated:

Dade County, Hialeah and other municipalities: The City consults with nearby local governments pertaining to land use issues.

The South Florida Regional Planning Council: The Regional Planning Council coordinates regional planning efforts and reviews developments of regional impact applications.

MAJOR INTERGOVERNMENTAL OPPORTUNITIES

The City of Miami Springs could, under the proper conditions, enter into an intergovernmental agreement with the Miami International Airport authority, Dade County and other local government jurisdictions with an interest in coordinated planning for the airport and adjacent municipalities which will experience land use problems and potentials related to development of the airport. Such a joint planning consortium could limit its efforts to conducting research or it might involve inter-local agreements which surrender some authority for land use decision-making.

8. CAPITAL IMPROVEMENTS ELEMENT

PUBLIC FACILITY NEEDS from OTHER ELEMENTS

Proposed Capital Projects: Table 8.1 lists the needed capital improvements identified in the other elements, for the period FY 1995/96 to FY 1999/2000. The improvements listed are those which are relatively large in scale and of high cost. Large scale and high cost are defined as improvements estimated to cost over $10,000 and that have an expected life of three years or more. Table 8.1 also indicates the funding mechanisms that can be used to implement the City's Proposed Capital Improvement Program through the year 2000. The proposed Capital Improvement Program includes projects within the City which are to be funded by various County and State agencies. The proposed funding levels as most recently reported by the applicable agency are included in these projections.

Capital Implications of the Future Land Use Plan: No major changes in the future land uses were identified in the 1989 Future Land Use Element. Therefore the Future Land Use Map had no major capital project implications.

SOURCES OF FUNDING

Table 8.2 indicates general revenues and expenditures for the years 1985-2000. The figures to 1994 are historical data. The Figures for 1995 through 2000 are projections.

The City's ***General Fund*** receives all revenues which are not required to be deposited in a separate special fund. These revenues are available for any lawful purpose, including both operating expenses and capital improvements. For the purposes of this inventory and the funding projections, the General Fund is divided into two parts: 1) *ad valorem* real property taxes, and 2) all other non-dedicated revenues. There are seven such separate sources of funds. This number may change from year to year as some new sources are added and some existing sources are eliminated.

Table 8.3 presents an estimate of anticipated total expenditure and revenue levels through the five year capital improvement planning period.. As indicated in this Table, net General City expenditures are projected to rise from $6,151,784 in 1994 to $7,492,242 in the year 2000, an increase of 21.8 percent. This increase in expenditures could be attributed to predicted inflation of about 3.5 percent which is about the average increase from 1985 to 1994. General revenues are projected to climb from $5,277,216 in 1994 to $7,128,739 in the year 2000, an increase of about 35 percent. The City's Ad Valorem taxes are expected to rise from $2,995,000 in 1994 to $4773,851 in the year 2000, an increase of 59 percent. This increase may be attributed partly to a projected millage increase and partly to an increase in assessed valuation.

General revenues in 1994 fell short of net General expenditures by approximately $875,000 and therefore should not be considered as a source of funds for capital improvement.

Miami Springs currently has four ***enterprise funds***: 1) the Water fund 2) the Sewer Fund; 3) the Sanitation Fund and 4) the Stormwater Fund. These enterprise funds can finance capital improvements in two ways. First, the City can establish Renewal and Replacement Funds for each, into which is deposited annually an amount representing a depreciation charge or retained earnings. Proceeds from revenue bonds can be used for improvements to the system operated as an enterprise account. Revenue from operations can be used to pay the debt service on the bonds. Table 8.3 shows the 1993 and 1994 revenues and expenses for each enterprise fund. The remaining revenue after expenditures are subtracted, goes into the general fund. In order to provide a reasonable trend for projecting future growth in the City's enterprise funds it is assumed that the 1994 differences will continue to be deposited into the General fund. The remaining revenue after expenditures in 1994 was approximately $403,000

LONG TERM DEBT

In 1996, Miami Springs had no general obligation bond debt. On June 17, 1997 the voters of Miami Springs approved the issuance of a $5,000,000 general obligation bond to buy the City of Miami Golf Course, which is now the Miami Springs Golf Course.

In 1997, the City had revenue bond debt of approximately $8.5 million. In 1998, a new revenue bond series was issued in the amount of $11.0 million, $7.8 million to refinance the old debt, $1.8 million for sewer system manifold improvements and $1.4 million for sewer system inflow and infiltration improvements.

FUNDING FOR PROPOSED PROGRAM

As indicated in Table 8.4, the City's total ***Assessed Value*** has increased each year between 1985 and 1994 budget years. In 1994 this value experienced an increase of over 7 percent. While an increase this large is not expected to continue at this rate over the next several years. However, as pointed out earlier, General revenues do not provide a surplus over expenditures and therefore can not be considered a source of funding for capital projects.

The millage rate for 1995-2000 for general operating purposes (non-debt service) has been projected to increase 4.17 percent annually (which conforms to the average annual increase of 4.17 percent from 1985 to 1994). Even so, the increase will not generate sufficient funds for capital projects.

The assessment ratio is assumed to be at or near 100 percent throughout the period. For budget purposes, total property tax collections are estimated to equal 97 percent of tax levy based on Assessed Value to allow for uncollected taxes.

Those capital items related to the Enterprise funds may be funded with the surplus generated from those operations. Even after debt service, the Enterprise funds generated a surplus of $403,000 in 1994.

Funding sources for individual projects are shown on Table 8.1.

1998 FINANCIAL INFORMATION

The City Administration is responsible for establishing and maintaining an internal control structure designed to ensure that the assets of the government are protected from loss, theft or misuse, ensuring that adequate controls exist to protect the fiscal integrity of the organization. The internal control structure is deigned to provide reasonable, but not absolute assurance that these objectives are met. The concept of reasonable assurance recognizes that: (1) the cost of a control should not exceed the benefits likely to be derived; and, (2) the valuation of costs and benefits requires estimates and adjustments by management. As part of the FY 1997 fiscal audit, the organization's independent certified public accountants, Rachlin Cohen & Holtz, prepared a report which addresses a series of internal control issues. These findings are being or have already been implemented by management to ensure the proper accountability of all City funds.

Budgetary Controls: The City maintains budgetary controls at a line-item level to ensure compliance with legal provisions embodied in the annual appropriated budget approved and amended by City Council. These procedures are required by Article IX, Section 9.1 of the City's Charter, along with Section 200.065, Florida State Statutes, and establish specific procedures to follow as related to the budget presentation, adoption, implementation and amendments of each respective operating fund budgets. The level of control at which expenditures cannot legally exceed the appropriated amounts is established at the department level. The City maintains budgetary controls through an encumbrances-accounting system which compares requested goods and services to unencumbered funds prior to release of purchase orders. Encumbrances at year end are reported as a reserve of fund balance or retained earnings. Accordingly, the first budget amendment of the subsequent fiscal year will reappropriate the reserves and authorize the continuation of the transaction. The City Manager is authorized to transfer budgeted amounts within departments of any fund; however, any budget revision that modifies or adjusts the total expenditure of any given department must receive authorization and approval by the City Council. To ensure compliance with budgets, monthly budget statements are prepared and reviewed by management and the City Council.

General Government Functions Revenues

General Fund revenues and other operating sources, including operating transfers-in, amounted to $8,196,240 for the fiscal year ended September 30, 1997. This is a 9.4% increase over the total revenues received for 1996. Table 8.5 presents a summary of general fund revenues and other financing sources for the fiscal year, their related percentage and the amount and percentage of increases or decreases in relationship to the prior year's proceeds.

The most significant source of general fund revenues was ad valorem taxes, representing 41.9% of total general fund revenues. Property taxes are based upon assessed value of real and personal properties as presented by the Miami-Dade County Property Tax Assessor, and applied to the millage rate set and adopted by the City Council. The final assessed value for the tax year 1997 of real and personal property was $535,970,125 compared to $519,671,581 in 1996 representing a 16,298,544 (or 3.1%) increase. Based upon the expanded interest in Miami Springs along with the development of two new hotels and the airbus facilities, we anticipate a continued increase in assessed value for FY 1998. With the subsequent two fiscal years, assessed values should increase considerably with these new commercial ventures.

Along with ad valorem revenues, the General Fund operates from the issuance of licenses and permits, shared revenues from State and County agencies (intergovernmental) including the 1/2-cent sales tax, 2/3 cent cigarette tax and 8-cent motor fuel tax. These funds provide for the second largest source of revenues from external purposes. Operating transfers-in are comprised

of Utility (Public Service) Taxes, Franchise Fees on telecommunications, electricity, cable television/broadband services, gas, fuels and oils sold in Miami Springs. Additionally, the four Enterprise Funds, Water, Sewer, Sanitation, and Stormwater, generate management fees from their operations to the general fund. As an average, the enterprise funds pay approximately 5% of the respective gross operating revenues for direct and indirect services provided by subordinated funds (i.e. utility billing, planning, engineering and building services).

General Government Functions Expenditures:

General Fund operating expenditures including operating transfers-out totaled $7,206,405 for the fiscal year ending September 30, 1997. This resulted in an operating surplus of $989,835 of revenues over expenditures. This surplus is recorded and included in the Unreserved, Undesigned General Fund Balance of the City and maintained for emergencies and working capital. The total expenditures recorded for the year reflects a 0.3% increase of total adjusted FY 1996 operating expenditures. Table 8.6 presents a summary of expenditures (excluding open encumbrances at year end) along with other financing uses for the fiscal year, the related percentage of the total and the amount and percentage of increase or decrease over the prior fiscal year's expenditures.

General Government is comprised of the following administrative departments: Mayor and City Council, Office of the City Manager, Office of the City Clerk, Personnel Department (renamed: Human Resources Department for FY 98), Office of the City Attorney, Planning, and Finance. Public Safety includes the Police Department, School Resource Officers, and the Building, Zoning and Code Enforcement Department. Public Works is comprised of the five general fund divisions of Administration, Streets & Street lights, Sidewalks, Public Properties, and Building Maintenance. Recreation and Culture includes the Recreation Division, Pool, and the Tennis Facility. Other includes the Non-Departmental or Unclassified accounts (for those services rendered by the City, but not necessarily assigned to one specific function).

Operating Transfers-out includes the annual general fund contribution to the Senior Center Fund (as part of the City's match. obligations), funding of capital projects and other subordinated transactions requiring an exchange of cash or equity.

Special Revenue Funds. Special revenue funds account for proceeds of specific revenue sources which are legally restricted to expenditures for specific purposes. The functions reported in this fund consist of collection of monies provided to the City from outside sources and designated to fund specific projects or provide special services. We have included the following funds and reported them in a combined manner: Excise Tax Fund, Local Option Gas Tax Fund, Senior Center Fund, Department of Justice Funds, and the City's Grant Fund.

Excise Tax Fund is used to account and record the receipts of Public Service Taxes (PST) and Franchise Fees from Telecommunication companies, electrical services, cable television/broadband services, private solid waste services, gas, fuel and oil services in the City. Revenues from PSTs and Franchise Fees were $1,007,430 and $667,245 respectively. On a monthly basis, receipts are recorded as revenues then transferred-out to the general fund.

The *Senior Center Fund* is used to account for all federal funds received under the Older Americans Act, Title III, administered through a local non-profit organization. The Center provides daily hot lunch programs to over 125 participants, along with daily home meal deliveries to over 50 residents. Other senior services, including health screening, nutritional and education programs, shopping assistance, and other regularly scheduled programs are provided. Revenues from grants amounted to $114,768; donations or contributions of $3,910; and, a contribution of $79,500 from the general fund.

The *Capital Projects Fund* is used to account for capital items and renovations or rehabilitations of city facilities. The City's past practice has been to fund capital projects as they progressed; however, in 1997, the City received voter authorization to sell general obligation bonds to acquire and renovate the Miami Springs Golf and Country Club. The bond proceeds of $5,000,000, recorded in the Capital Projects Fund, were received on September 29, 1997, with the acquisition of the property on October 24, 1997. Renovation of the facilities will occur during FY 1998 and FY 1999.

General Fixed Assets. The general fixed assets of the City are those used in the performance of general governmental functions and. exclude the assets of the four Enterprise and three Internal Service Funds. In accordance with generally accepted accounting principles for local governments, the City is not required and does not record depreciation on general fixed assets nor does it record infrastructure assets such as roads, bridges, curbs and gutters, streets and sidewalks, drainage systems and similar assets that are immovable and of value only to the City. Assets are recorded at cost except donated items which are recorded at the fair market value of the item at the time of the contribution. As of September 30, 1997, the general fixed assets acquired from the general fund, federal grants, and donated revenues amounted to $5,557,420.

General Long-Term Debt Account Group. The General Long-term Debt Account Group is a self-balancing group of accounts set up to account for liabilities arising from accumulated, unpaid vacation and sick pay. The general long-term debt as of September 30, 1997 for accrued leave benefits is $497,072. Additionally, the debt obligation for the City's Series 1997 General Obligation Bond Issue is recorded in this group of accounts.

Enterprise Funds. The City's enterprise fund operations include Water, Sewer, Sanitation, and Stormwater Operations. Each fund is established to finance and account for the acquisition, operations and maintenance of facilities, utility services, and revenue bond debt obligations. The cost of providing these goods and services on a continuing basis is financed through the collection of charges from users. The comparative data in Table 8.7 reflects the net operating income or loss on corresponding operating revenues.

Debt Administration. The City's outstanding long-term debt obligations consists of one refunded Utility Revenue Bond issue, Series 1994 recorded in the City's Sewer Enterprise Fund and one General Obligation Bond, Series 1997 for the acquisition and renovation of the Miami Springs Golf and Country Club. On September 30, 1997, the outstanding balance due on the Revenue Bond was $7,515,000 and the obligation for the GO Bond issue was $5,000,000 (of which the first principal and interest payment is available from capitalized revenues deposited on closing).

Fiduciary Operations

Pension Trust Funds. The City administers two independent retirement systems: the Miami Springs General Employee Retirement System and the Miami Springs Police and Firefighters Retirement System and are independently audited, but incorporated in the Annual Report for information purposes.

Risk and Liability Management

Incorporated as a integrated function of the City's Finance Department, Risk Management includes the management of all city liability coverage, workers compensation and health benefits for the City's employees and dependents. Each fund and department provide an allocated por-

tion of premiums and dues for coverage as an expense with a corresponding revenue in the respective internal service fund.

The *Liability Insurance Fund* accounts for premiums, administration and processing of liability coverages including general liability, bonding and waivers, automobile coverages, and property and casualty coverages. Total contributions were $350,780.

The *Group Health Insurance Fund* provides the mechanism for the accumulation of funds, both from the City's employees and the employers' contributions for health, dental, vision, and life insurance premiums. For FY 1997, health benefits were provided by Humana Health Insurance, Oral Health Service, Vision Care Services and Sun Life, for medical, dental, vision and life insurance coverage respectively.

Cash Management - Treasury

The Finance Department is fully charged with the security of all City funds and assets along with maximizing the returns on all surplus or idle cash. Cash management policies are clearly established and delineated by State Statutes as well as administrative policies implemented by management with Council approval regarding the types of investment instruments which the City uses for returns on cash. Primarily, surplus cash and mandated reserves are invested in the State of Florida, State Board of Administration Pooled Equity Fund with a one-year moving average of 5.15% through September 30, 1997. Additionally, proceeds from the 1997 GO Bonds were invested in short-term Certificates of Deposit with First Union National Bank at varying yields.

Economic Condition and Outlook

The City of Miami Springs is located in Southeast Florida, in Miami-Dade County, immediately bordering the Miami International Airport. The City, primarily residential in make-up, is 2.8 square miles and has just under 15,000 full-time residents. The southern-most area of the City located along 36th Street, is commercial in nature with several hotels, restaurants and other businesses servicing the Miami International Airport and employees.

As we began FY 1997, the Administration was in the process of closing two fiscal years (FY 1995 and FY 1996) simultaneously. The end result of the exercise was that FY 1995 was less than satisfactory. Numerous financial adjustments were made due to the poor administration of the operations of the City. FY 1996, under new leadership, brought about significantly improved financial reporting mechanisms and controls.

Property values were anticipated to be flat, but ended up with an improvement over the prior fiscal year. Working capital balances, however, were dismal and enhancement of these funds became a primary goal for the FY 1997 administration. We are pleased to say that cash balances have turned around and with the close of FY 1997, the City is back in line with its objective to be fiscally secure and able to meet unanticipated emergencies or obligations.

We also close FY 1997 with a series of exciting new ventures ahead of us. First, two new hotels began the process of expanding their facilities with over 200 new rooms expected by FY 1999. Additionally, after numerous meetings and weeks of hard work, the City announced that it will be the new home for the Airbus training facility - generating new jobs and considerable increases to the City's commercial tax base. Best of all, through a long bidding process, the City was awarded the opportunity to buy and renovate the Miami Springs Golf Course from the City of Miami. The voters overwhelming approved and ratified the sale of $5,000,000 in General Obli-

gation bonds to purchase and rehabilitate the 40 year old golf course, opening the door to new ventures and opportunities immediately upon exchange of ownership.

We have also seen the continued development and construction of the city-wide bike path and landscaping project. Along Royal Poinciana Boulevard, the State of Florida removed the nonecologically friendly trees and began a complete overhaul of the trees and ground cover along the Miami River. At the time this report was being prepared, the State has already begun the task of planting and landscaping the right-of-way along the canal and bike path. It is anticipated that this project will be completed during FY 1998.

The 40-year old Miami Springs Swimming Pool Facility had considerable rehabilitation and renovation work performed at the pool and cabana areas during FY 1997. Initially, funding for the repair work was from the City's General Fund. However, after meetings with Senator Casas and with his direct involvement, an appropriation and award of $100,000 was granted by the State of Florida to offset the expenditures already incurred. The additional work necessary at the facility, approximately $456,000, is scheduled to begin in December, 1997 and funded by the 1997 Safe Neighborhood Bond Issue managed and reported by Miami Dade County and funded to the associated municipalities as a "grant" for authorized work.

Other Information

Independent Audit. State of Florida statutes require that annual audits of the City's Financial Statements, accounts and records, be performed by external auditors. Miami Springs continues to use the services of the Certified Public Accounting firm of Rachlin Cohen & Holtz. In addition to meeting the specified state requirements, this audit was prepared and presented in accordance with the requirements set forth in OMB Circular A-128 and Generally Accepted Accounting Standards.

Table 8.1
CAPITAL IMPROVEMENT SCHEDULE PROGRAM
CITY OF MIAMI SPRINGS
April, 1998

PROJECT NAME AND DESCRIPTION	FUNDING SOURCES	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	TOTAL FIVE YEARS
C-6 & Ludlum Canal Bank Landscaping & Bike Path - Landscape to Northwesterly City Limits (770 L.F.)	SFWMD Share Joint Participation Agreement	$12,300					$12,300
C-6 & Ludlum Canal Bank Landscaping & Bike Path - Landscape to City Limits	City Share Joint Participation Agreement with SFWMD	$12,300					$12,300
C-6 & Ludlum Canal Bank Landscaping & Bike Path - Bike Path to Northwesterly City Limits (770 L.F. @ $32)	ISTEA / BESTEA Enhancement (Future)	$24,600					$24,600
C-6 & Ludlum Canal Bank Landscaping & Bike Path - Purchase of Bustos Property	FRDAP or other Grant Funding				$90,000		$90,000
C-6 & Ludlum Canal Bank Landscaping & Bike Path - Purchase of Bustos Property	City Grant Match				$90,000		$90,000
C-6 Ludlum Canal Bank Landscaping & Bike Path - Landscaping Ludlum	ISTEA / BESTEA Enhancement (Future)	$45,000	$45,000				$90,000
Dove Avenue Park - ADA Bathroom and other Improvements	County Safe Neighborhood Parks Bond Issue	$134,000					$134,000
Landscape, Beautification, Streetscape	General Fund Revenues	$50,000	$40,000	$30,000	$20,000	$20,000	$160,000
Recreation Improvements - Stafford Park, Prince Field, Pool	County Safe Neighborhood Parks Bond Issue	$450,000	$50,000				$500,000
TOTAL OPEN SPACE / PARKS		**$728,200**	**$135,000**	**$30,000**	**$200,000**	**$20,000**	**$1,113,200**

Table 8.1 (Continued)
CAPITAL IMPROVEMENT SCHEDULE PROGRAM
CITY OF MIAMI SPRINGS
April, 1998

PROJECT NAME AND DESCRIPTION	FUNDING SOURCES	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	TOTAL FIVE YEARS
Sewer System Improvements	New Sewer Revenue Bond Issue	$4,000,000	$600,000	$200,000	$100,000	$100,000	$5,000,000
Cross Street Water System Reinforcement	Developer and Aviation Department	$100,000					$100,000
Other Water System Improvements	Water System Revenues	$250,000	$250,000	$250,000	$250,000	$250,000	$1,250,000
Stormwater Improvements	Stormwater Fund	$200,000	$200,000	$150,000	$150,000	$150,000	$850,000
TOTAL UTILITIES		**$4,550,000**	**$1,050,000**	**$600,000**	**$500,000**	**$500,000**	**$7,200,000**
Street Lights Anthony Abraham Drive	Local Option Gas Tax and General Fund Revenues	$50,000					$50,000
Improve Alley Approaches from Street Pavement to Sidewalk	General Fund and Local Option Gas Tax	$20,000	$20,000	$20,000	$20,000	$20,000	$100,000
Sidewalk Replacement and Reconstruction	Local Option Gas Tax and Property Owners	$300,000	$300,000	$300,000	$300,000	$300,000	$1,500,000
Annual Street Resurfacing	Local Option Gas Tax	$250,000	$250,000	$250,000	$250,000	$250,000	$1,250,000
Street Lighting Improvements Citywide	General Fund and Local Option Gas Tax	$50,000	$50,000	$50,000	$50,000	$50,000	$250,000
Traffic Calming Improvements	ISTEA / BESTEA	$100,000	$100,000	$100,000	$100,000	$100,000	$500,000
TOTAL RIGHT OF WAY		**$770,000**	**$720,000**	**$720,000**	**$720,000**	**$720,000**	**$3,650,000**
City Hall Renovations	General Fund and Legislative Grant	$300,000	$200,000				$500,000
Police Radio System 800 MHz	General Fund	$25,000	$25,000	$25,000	$25,000	$25,000	$125,000
Municipal Parking Facility - Feasibility Study, Land Acquisition, Design	General Fund Revenues		$50,000	$83,400	$83,300	$83,300	$300,000
TOTAL MISCELLANEOUS		**$325,000**	**$275,000**	**$108,400**	**$108,300**	**$108,300**	**$925,000**

Table 8.1 (Continued)
CAPITAL IMPROVEMENT SCHEDULE PROGRAM
CITY OF MIAMI SPRINGS
April, 1998

PROJECT NAME AND DESCRIPTION	FUNDING SOURCES	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	TOTAL FIVE YEARS
Golf Course - Course Upgrade	General Obligation Bond Issue and Golf Course Fund	$600,000	$600,000				$1,200,000
Golf Course - Building Upgrade	General Obligation Bond Issue and Golf Course Fund	$250,000					$250,000
Golf Course - Driving Range Upgrade	General Obligation Bond Issue and Golf Course Fund	$200,000					$200,000
TOTAL GOLF COURSE		$1,050,000	$600,000	$0	$0	$0	$1,650,000

TOTAL OPEN SPACE /PARKS	$728,200	$135,000	$30,000	$200,000	$20,000	$1,113,200
TOTAL UTILITIES	$4,550,000	$1,050,000	$600,000	$500,000	$500,000	$7,200,000
TOTAL RIGHT OF WAY	$770,000	$720,000	$720,000	$720,000	$720,000	$3,650,000
TOTAL MISCELLANEOUS	$325,000	$275,000	$108,400	$108,300	$108,300	$925,000
TOTAL GOLF COURSE	$1,050,000	$600,000	$0	$0	$0	$1,650,000
TOTAL CAPITAL IMPROVEMENT PROGRAM	$7,423,200	$2,780,000	$1,458,400	$1,528,300	$1,348,300	$14,538,200

Table 8.2
General Revenues and Expenditures 1985-2000

	General Expenditures (Page 52)	Non Departmental Expenditures (Page 52)	Net General Expenditures (Calculated)	Percent Change	General Revenues (Page 53)	Percent Change	Ad Valorem Tax Levy (Page 54)	Percent Change	Other Revenues (Calculated)	Millage (Page 56)	Percent Change
Historical Data 1984 to 1994											
1985	$4,692,611	$26,563	$4,666,048		$3,416,965		$1,509,820		$1,907,145	4.73	
1986	$4,844,570	$11,675	$4,832,895	3.6%	$3,653,257	6.9%	$1,530,166	1.3%	$2,123,091	4.73	0.00
1987	$5,301,816	$18,662	$5,283,154	9.3%	$3,829,750	4.8%	$1,659,714	8.5%	$2,170,036	4.83	0.02
1988	$5,508,756	$12,708	$5,496,048	4.0%	$4,140,929	8.1%	$1,868,142	12.6%	$2,272,787	5.30	0.10
1989	$5,785,541	$27,760	$5,757,781	4.8%	$4,492,312	8.5%	$2,172,358	16.3%	$2,319,954	5.21	-0.02
1990	$6,380,447	$14,319	$6,366,128	10.6%	$4,822,038	7.3%	$2,489,556	14.6%	$2,332,482	5.95	0.14
1991	$6,446,214	$20,632	$6,425,582	0.9%	$5,272,626	9.3%	$2,650,294	6.5%	$2,622,332	5.95	0.00
1992	$5,916,975	$51,766	$5,865,209	-8.7%	$4,676,618	-11.3%	$2,549,000	-3.8%	$2,127,618	5.84	-0.02
1993	$6,601,593	$48,471	$6,553,122	11.7%	$4,892,191	4.6%	$2,789,960	9.5%	$2,102,231	6.71	0.15
1994	$6,739,784	$588,000	$6,151,784	-6.1%	$5,277,216	7.9%	$2,995,000	7.3%	$2,282,216	6.71	0.00
Average 1985 to 1994				3.3%		5.1%		8.1%			0.04
Projections for 1995 to 2000											
Projections are based on the expectation that furture growt will occur at the average percentage rate experienced from 1985 to 1994.											
1995	$6,964,893	$607,639	$6,357,254	3.3%	$5,548,465	5.1%	$3,236,996	8.1%	$2,311,469	6.99	0.04
1996	$7,197,520	$627,934	$6,569,586	3.3%	$5,833,656	5.1%	$3,498,545	8.1%	$2,335,111	7.28	0.04
1997	$7,437,917	$648,907	$6,789,010	3.3%	$6,133,506	5.1%	$3,781,228	8.1%	$2,352,278	7.58	0.04
1998	$7,686,344	$670,581	$7,015,763	3.3%	$6,448,768	5.1%	$4,086,751	8.1%	$2,362,017	7.90	0.04
1999	$7,943,068	$692,978	$7,250,089	3.3%	$6,780,235	5.1%	$4,416,960	8.1%	$2,363,274	8.23	0.04
2000	$8,208,366	$716,124	$7,492,242	3.3%	$7,128,739	5.1%	$4,773,851	8.1%	$2,354,888	8.57	0.04

Table 8.3
Enterprise Funds Revenues and Expenditures 1991--1994 and 1995 - 2000 Projected

Year	Water Fund Revenues	Water Fund Expenses	Sewer Fund Revenues	Sewer Fund Expenses	Sanitation Fund Revenues	Sanitation Fund Expenses	Stormwater Fund Revenues	Stormwater Fund Expenses	Total Revenue	Total Expenses
Historical Data										
1991	$673,080	$672,252	$1,775,123	$1,643,883	$0	$0	$0	$0	$2,448,203	$2,316,135
1992	$920,247	$862,625	$1,813,943	$1,821,561	$1,334,408	$1,448,242	$0	$0	$4,068,598	$4,132,428
1993	$972,014	$962,047	$1,816,891	$1,857,142	$1,246,931	$1,343,876	$80,901	$42,833	$4,116,737	$4,205,898
1994	$1,198,797	$1,135,489	$2,441,198	$2,402,856	$1,690,057	$1,642,921	$365,826	$106,294	$5,695,878	$5,287,560
Average 1991 to 1994	26.04%	22.97%	12.51%	15.39%					44.22%	42.76%
Projections										
The projections are based on a nearly stable population (as shown in the population projection in the Land Use Element of Part I) and on three percent inflation.										
1995	$1,234,761	$1,169,554	$2,514,434	$2,474,942	$1,740,759	$1,692,209	$376,801	$109,483	$5,866,754	$5,446,187
1996	$1,271,804	$1,204,640	$2,589,867	$2,549,190	$1,792,981	$1,742,975	$388,105	$112,767	$6,042,757	$5,609,572
1997	$1,309,958	$1,240,779	$2,667,563	$2,625,666	$1,846,771	$1,795,264	$399,748	$116,150	$6,224,040	$5,777,860
1998	$1,349,257	$1,278,003	$2,747,590	$2,704,436	$1,902,174	$1,849,122	$411,740	$119,635	$6,410,761	$5,951,195
1999	$1,389,734	$1,316,343	$2,830,018	$2,785,569	$1,959,239	$1,904,596	$424,093	$123,224	$6,603,084	$6,129,731
2000	$1,431,426	$1,355,833	$2,914,918	$2,869,136	$2,018,016	$1,961,734	$436,815	$126,921	$6,801,176	$6,313,623

Note: Revenue and Expense figures include "other revenues" which are detailed separately on the earnings statement.

Table 8.4
Total Assessed Value Trends and Projections

Year	*Real Property Assessed Value* (Page 55)	*Percent Change*	*Gross Property Assessed Value* (Page 55)	*Percent Change*	*Total adjusted Tax Levy* (Page 54)	*Percent Change*
Historical Data						
1985	$277,149,267		$320,463,920		$1,509,820	
1986	$299,299,256	7.99%	$339,415,403	5.91%	$1,530,166	1.35%
1985	$300,043,075	0.25%	$342,774,062	0.99%	$1,659,714	8.47%
1988	$307,312,925	2.42%	$354,771,588	3.50%	$1,868,142	12.56%
1989	$367,904,331	19.72%	$420,915,072	18.64%	$2,172,358	16.28%
1990	$365,813,683	-0.57%	$419,497,552	-0.34%	$2,489,556	14.60%
1991	$393,346,531	7.53%	$448,262,817	6.86%	$2,650,294	6.46%
1992	$400,855,789	1.91%	$456,148,149	1.76%	$2,549,000	-3.82%
1993	$414,608,565	3.43%	$469,692,346	2.97%	$2,789,960	9.45%
1994	$445,021,958	7.34%	$499,173,255	6.28%	$2,995,000	7.35%
Average 85-94		5.56%		5.17%		8.08%
Projections						
The projections below are based on the assumption that growth in value will continue at the average rate of increase.						
1995	$469,765,179	5.56%	$524,980,512	5.17%	$3,236,996	8.08%
1996	$495,884,123	5.56%	$552,122,005	5.17%	$3,498,545	8.08%
1997	$523,455,280	5.56%	$580,666,712	5.17%	$3,781,228	8.08%
1998	$552,559,394	5.56%	$610,687,181	5.17%	$4,086,751	8.08%
1999	$583,281,696	5.56%	$642,259,709	5.17%	$4,416,960	8.08%

Table 8.5
Total Revenue Sources

Source	Amount	Percent of Total	Increase/ (Decrease) from 1996	Percent of Increase/ (Decrease)
Ad Valorem Revenues	$ 3,428,889	41.9%	$93,479	2.7%
Licenses/Permits	442,316	5.4%	59,516	13.5%
Intergovernmental	994,908	12.1%	(3,709)	-0.4%
Charges for Services	230,906	2.8%	(39,051)	-16.9%
Fines/Forfeitures	190,325	2.3%	4,621	0.3%
Interest Income	141,286	1.7%	35,223	24.9%
Other Revenues	111,001	1.4%	55,954	50.4%
Operating Transfers-in	2,656,609	32.4%	562,510	21.2%
TOTALS	$8,196,240	100.0%	$768,543	9.4%

Table 8.6
Total Expenditures

Source	Amount	Percent of Total	Increase/ (Decrease) from 1996	Percent of Increase/ (Decrease)
General Government	$1,218,916	16.9%	$128,384	10.5%
Public Safety	3,507,996	48.7%	255,081	7.3%
Public Works	1,142,522	15.9%	(41,081)	-3.6%
Recreation & Culture	796,484	11.0%	(54,036)	-6.8%
Other Services	234,581	3.3%	(287,209)	122.4%
Operating Transfers-out	305,906	4.2%	23,716	7.8%
TOTALS	$7,206,405	100.0%	$24,855	0.3%

Table 8.7
Enterprise Fund Operations

Fund	Operating Revenues FY 1996	Operating Revenues FY 1997	Net Income/(Loss) FY 1996	Net Income/(Loss) FY 1997
Water	$1,251,780	$1,093,138	$ 136,481	$ (51,886)
Sewer	3,330,737	3,790,012	(235,236)	(1,343,436)
Sanitation	1,796,823	1,635,194	367,131	40,837
Storm water	331,134	309,730	93,699	123,729
Total (Memo only)	$6,710,474	$6,828,074	$362,075	$(1,230,857)